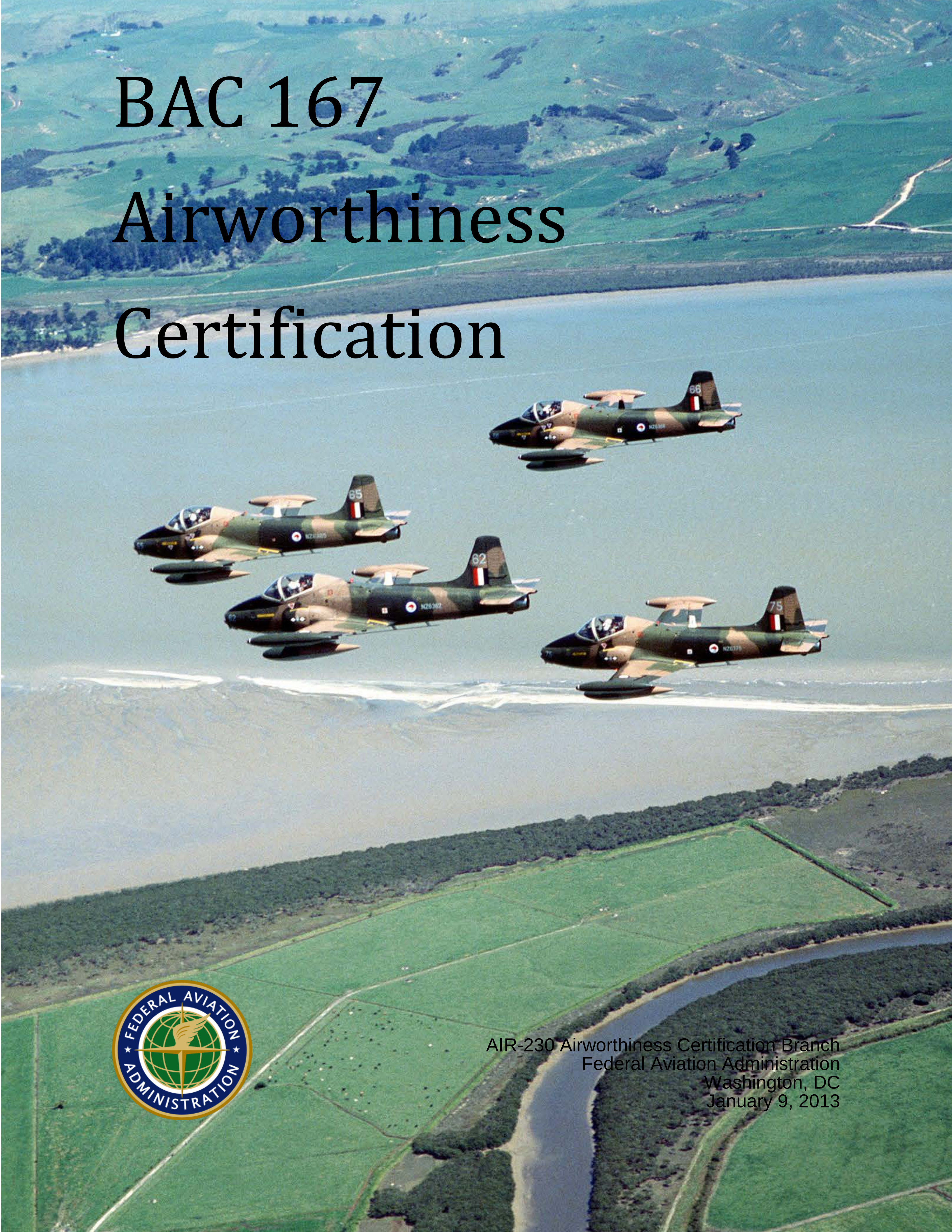
BAC 167 Airworthiness Certification



AIR-230 Airworthiness Certification Branch
Federal Aviation Administration
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Introduction – BAC 167 Airworthiness Certification

This document provides information to assist in the airworthiness certification and safe civil operation of a British Aircraft Corporation 167 aircraft.

Attachment 1 provides a general overview of this document. Attachment 2 contains background information on the BAC 167 aircraft. Attachment 3 lists historic airworthiness issues with the BAC 167 for consideration in the certification, operation, and maintenance of these aircraft. The list is not exhaustive, but includes our current understanding of risks that should be assessed during in the certification, operation, and maintenance of these aircraft. Concerns regarding particular issues may be mitigated in various ways. Some may be mitigated via the aircraft maintenance manual(s) or the aircraft inspection program. Others may be mitigated via operating procedures i.e., SOPs) and limitations, aircraft flight manual changes, or logbook entries

Not all issues in attachment 3 may apply to a particular aircraft given variations in aircraft configuration, condition, operating environment, or other factors. Similarly, circumstances with an aircraft may raise other issues not addressed by attachment 2 that require mitigation. Attachment 4 includes additional resources and references.

Attachment 1 – Overview of this Document

Purpose

This document is to provide all those involved in the certification, operation, and maintenance of the BAC 167 aircraft with safety information and guidance to help assess and mitigate safety hazards for the aircraft. The existing certification procedures in FAA Order 8130.2, Airworthiness Certification of Aircraft and Related Products, do not account for many of the known safety concerns and risk factors associated with many high-performance former military aircraft. These safety concerns and risk factors associated with many high performance former military aircraft include—

- Lack of consideration of inherent and known design failures;
- Several single-point failures;
- Lack of consideration for operational experience, including accident data and trends;
- Operations outside the scope of the civil airworthiness certificate;
- Insufficient flight test requirements;
- Unsafe and untested modifications;
- Operations over populated areas (the safety of the non-participating public has not been properly addressed in many cases);
- Operations from unsuitable airports (i.e., short runways, Part 139 (commercial) airports);
- High-risk passenger carrying activities taking place;
- Ejection seat safety and operations not adequately addressed;
- Weak maintenance practices to address low reliability of aircraft systems and engines;
- Insufficient inspection schedules and procedures;
- Limited pilot qualifications, proficiency, and currency;
- Weapon-capable aircraft not being properly demilitarized, resulting in unsafe conditions;
- Accidents and serious incidents not being reported; and
- Inadequate accident investigation data.

Research of BAC 167 Safety Data

The aircraft, relevant processes, and safety data are thoroughly researched and assessed. This includes—

- Aviation Safety (AVS) Safety Management System (SMS) policy and guidance;
- Historical military accident/incident data and operational history;
- Civil accident data;
- Safety risk factors;
- Interested parties and stakeholders (participating public, non-participating public, associations, service providers, air show performers, flying museums, government service providers, airport owners and operators, many FAA lines of business, and other U.S. Government entities);
- Manufacturing and maintenance implications; and
- Design features of the aircraft.

This Document

The document is a compilation of known safety issues and risk factors identified from the above research that are relevant to civil operations. This document is organized into four major sections:

- General airworthiness issues (grey section),
- Maintenance (yellow section),
- Operations (green section), and
- Risk management, standard operating procedures and best practices (blue section).

This document also provides background information on the aircraft and an extensive listing of resources and references.

How to Use the Document

This document was originally drafted as job aids intended to assist FAA field office personnel and operators in the airworthiness certification of these aircraft. As such, some of the phrasing implies guidance to FAA certification personnel. The job aids were intended to be used during the airworthiness certification process to help identify any issues that may hinder the safe certification, maintenance, or operation of the aircraft. The person performing the certification and the applicant would to discuss the items in the job aid, inspect documents/records/aircraft, and mitigate any issues. This information would be used to draft appropriate operating limitations, update the aircraft inspection program, and assist in the formulation of adequate operating procedures. There are also references to requesting information from, or providing information to the person applying for an airworthiness certificate. We are releasing this document as drafted, with no further updates and revisions, for the sole purpose of communicating safety information to those involved in the certification, operation, and maintenance of these aircraft. The identified safety issues and recommended mitigation strategies are clear and can be considered as part of the certification, operation, and maintenance of the air aircraft.

Attachment 2—Background Information on the BAC 167

The British Aircraft Corporation (BAC) 167 is a single-engine, jet-propelled, low-winged monoplane. It is powered by a Viper engine, is pressurized, and is of all-metal construction. The aircraft is fitted with dual controls and was designed for basic and advanced flight training duties, as well as use as a weapons trainer and to perform operational strike duties using guns, rockets, and bombs. The Jet Provost Mk 1 was a Bristol Siddeley Viper Armstrong Siddeley Viper (ASV).5 (1640 lb s.t.) jet-powered development of the Leonides-engined Piston Provost. The Mk 2 employed the Viper ASV.8 engine, which became the Viper Mk 102, with static thrust increased to 1750 lb. The Mk 3 was the main production version for the RAF and originally had the same powerplant as the Mk 2 but included Martin-Baker ejection seats, clear view front windscreen, and wing-tip fuel tanks. The Mk 4 was an Mk 3A with an uprated Viper 202 engine (2500 lb static thrust). The Mk 5 was a further development with a single piece canopy, additional wing fuel storage and a pressurized cabin. The Mk 5A also incorporated newer avionics, and was designated the BAC 145. The BAC 167 Strikemaster is a BAC 145 airframe and is powered by a Viper 20 Mk 535 turbojet (3,410 lb). It also has external stores carrying ability and six underwing hard points.

The BAC 167 Strikemaster is essentially an armed version of the Jet Provost T Mk 5 with a strengthened airframe, new communication and navigation gear, up-rated ejection seats, revised fuel system, and shortened landing gear. First flown in 1967, the aircraft was marketed as a light attack or counter-insurgency aircraft. Most large scale purchasers were air forces wanting an advanced trainer, although Ecuador, Oman, and Yemen have used their aircraft in combat. A total of 146 were built.

Capable of operating from rough air strips, with dual ejection seats suitable even for low-altitude escape, it was widely used by third-world nations. Use of the type was restricted by most users after the Royal New Zealand Air Force found fatigue cracking in the wings of its aircraft. Aircraft retired by Botswana, New Zealand, Saudi Arabia, and Singapore have found their way into museums and private collections. Approximately 11 privately owned Strikemasters are still flying.

Specifications (T Mk. 5)

General characteristics

- **Crew:** Two
- **Length:** 34 ft 0 in (10.36 m)
- **Wingspan:** 35 ft 4 in (10.77 m)
- **Height:** 10 ft 2 in (3.10 m)
- **Wing area:** 213.7 ft² (19.80 m²)
- **Empty weight:** 4,888 lb [8] (2,222 kg)
- **Loaded weight:** 6,989 lb (3,170 kg)
- **Max. takeoff weight:** 9,200 lb (4,173 kg)
- **Powerplant:** 1 × Armstrong Siddeley Viper Mk-202 turbojet, 2,500 lbf (11.1 kn)

Performance

- **Maximum speed:** 440 mph (382 knots, 708 km/h) at 25,000 ft (7,620 m)
- **Range:** 900 mi [9] (780 nm, 1,450 km)
- **Service ceiling:** 36,750 ft (11,200 m)
- **Rate of climb:** 4,000 ft/min (20.3 m/s)
- **Wing loading:** 32.7 lb/ft² (160 kg/m²)

Armament

- **Guns:** 2× 0.303 in (7.7 mm) machine guns (Mark 55)
- **Rockets:**
  - 6× 60 lb (27 kg) *or*
  - 12× 25 lb (11 kg) *or*
  - 28x 68 mm SNEB rockets in four pods
- **Bombs:**
  - 4× 540 lb (245 kg)

Variants

- **Strikemaster Mk 80** : Export version for Saudi Arabia, 25 aircraft.
- **Strikemaster Mk 80A**: 20 aircraft were sold to Saudi Arabia as part of a follow-up order.
- **Strikemaster Mk 81** : Export version for South Yemen, four aircraft.
- **Strikemaster Mk 82** : Export version for Oman, 12 aircraft.
- **Strikemaster Mk 82A**: 12 aircraft were sold to Oman as part of a follow-up order.
- **Strikemaster Mk 83** : Export version for Kuwait, 12 aircraft.
- **Strikemaster Mk 84** : Export version for Singapore, 16 aircraft.
- **Strikemaster Mk 87** : Export version for Kenya, six aircraft.
- **Strikemaster Mk 88** : Export version for New Zealand, 16 aircraft.
- **Strikemaster Mk 89** : Export version for Ecuador, 22 aircraft.

- **Strikemaster Mk 89A**: A number of aircraft were sold to Ecuador as part of a follow-up order.
- **Strikemaster Mk 90** : Export version for Sudan. The last Strikemaster was delivered to Sudan in 1984.

Operators

Botswana

- Botswana Defense Force Air Wing operated briefly ex-Kuwaiti Mk 83s and ex-Kenyan Mk 87s.

Ecuador

- Ecuadorian Air Force received BAC Strikemaster Mk 89/89A aircraft.

Kenya

- Kenya Air Force received BAC Strikemaster Mk 87 aircraft.

Kuwait

- Kuwait Air Force received BAC Strikemaster Mk 83 aircraft.

New Zealand

- Royal New Zealand Air Force
  No. 14 Squadron RNZAF received BAC Strikemaster Mk 88 aircraft.

Oman

- Royal Air Force of Oman received BAC Strikemaster Mk 82/82A aircraft.

Saudi Arabia

- Royal Saudi Air Force received BAC Strikemaster Mk 80/80A aircraft.

Singapore

- Republic of Singapore Air Force received BAC Strikemaster Mk 84 aircraft, all retired in 1984.

South Yemen

- South Yemen Air Force received BAC Strikemaster Mk 81 aircraft.

Sudan

- Sudanese Air Force received BAC Strikemaster Mk 90 aircraft.

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
Preliminary and General Airworthiness Inspection Issues			
1.	Aviation Safety (AVS) Safety Management System (SMS) Guidance	Use the AVS SMS guidance as part of the airworthiness certification process, as it supplements the existing Code of Federal Regulations (CFR). FAA Order VS8000.367 (May 14, 2008) and FAA Order VS8000.369 (September 30, 2008) are the basis for, but not limited to (1) identifying hazards and making or modifying safety risk controls, which are promulgated in the form of regulations, standards, orders, directives, and policies, and (2) issuing certificates. AVS SMS is used to assess, verify, and control risks, and safety risk management is integrated into applicable processes. Appropriate risk controls or other risk management responses are developed and employed operationally. Safety risk management provides for initial and continuing identification of hazards and the analysis and assessment of risk. The FAA provides risk controls through activities such as the promulgation of regulations, standards, orders, directives, advisory circulars (AC), and policies. The safety risk management process (1) describes the system of interest, (2) identifies the hazards, (3) analyzes the risk, (4) assesses the risk, and (5) controls the risk.	
2.	Temporary Extensions	A new certification process using an aircraft-specific job aid is being introduced as aircraft are being considered for certification. As a result, the process allows for the field offices to consider temporary extensions of existing airworthiness certificates, as appropriate. This will enable AIR-200 to complete drafting the aircraft-specific job aid and allow the field inspector(s) and the applicant additional time to complete a full review with the job aid. Field inspectors are cautioned when issuing a temporary extension to ensure any safety issues they believe need to be addressed and corrected are mitigated as part of this process. FAA Headquarters (AIR-200, AFS-800, and AFS-300) will assist with any questions concerning issues affecting the aircraft.	
3.	Aircraft Familiarization	Become familiar with the aircraft before initiating the certification process. One of the first steps in any aircraft certification is to be familiar with the aircraft in question. Such knowledge, including technical details, is essential in establishing a baseline as the certification process moves forward.	
4.	Preliminary Assessment	Conduct a preliminary assessment of the aircraft to determine condition and general airworthiness. A Manufacturing Inspection District Office (MIDO) inspector may seek Flight Standards District Offices (FSDO) support as part of this process. Coordination between the offices may be essential in ensuring adequate technical expertise.	
5.	Modification State	Using the UK Airworthiness Notes as a reference, ask if the applicant checked that all modifications classed B/2 or above are embodied against the Master list reference "BAC167 Strikemaster Master Numerical Modification List" Second Edition, dated July 1997.	
6.	Condition for Safe Operation	Ensure the FAA inspector or authorized representative of the Administrator evaluates the overall condition of the aircraft to determine it is in a condition for safe operation. This refers to the condition of the aircraft relative to wear and deterioration. The evaluation depends on information such as aircraft age, completeness of maintenance records, and the overall condition of the aircraft.	

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7.	Main Safety Issues	The main goal of this document is to assist the FAA in eliminating preventable accidents and those accidents and incidents caused by well-known problems that were either not fixed operationally or require specific mitigation to be contained. In other words, unnecessary risks must be mitigated. This document addresses the following general safety concerns regarding former military high-performance aircraft: • Lack of consideration of inherent and known design failures; • Several single-point failures; • Lack of consideration for operational experience, including accident data and trends; • Operations outside the scope of the airworthiness certificate being sought; • Insufficient flight test requirements; • Unsafe and untested modifications; • Operations over populated areas (the safety of the non-participating public has not been properly addressed in many cases); • Operations from unsuitable airports; • High-risk passenger carrying activities taking place; • Ejection seat safety and operation not adequately addressed; • Weak maintenance practices to address low reliability of aircraft systems and engines; • Ignoring required inspection schedules and procedures; • Limited pilot qualifications, proficiency, and currency; • Weapon-capable aircraft not being demilitarized, resulting in unsafe conditions; • Extensive brokering; • Extensive use of unqualified Designated Airworthiness Representatives (DAR); • Accidents and serious incidents not being reported; and • Inadequate accident investigation data.	
8.	Denial	The FAA will provide a letter to the applicant stating the reason(s) for denial and, if feasible, identify which steps may be accomplished to meet the certification requirements if the aircraft does not meet them and the special airworthiness certificate is denied. Should this occur, a copy of the denial letter will be attached to FAA Form 8130-6, Application for U.S. Airworthiness Certificate, and forwarded to AFS-750, and made a part of the aircraft's record.	

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9.	Potential Reversion Back to Phase I	Notify the applicant that certain modifications to the aircraft will invalidate Phase II. These include: (a) structural modifications, (b) aerodynamic modifications, including externally mounted equipment except as permitted in the limitations issued, and (c) change of engine make, model, or power rating (thrust or horsepower). The owner/operator may return the aircraft to Phase I to flight test specific items as required. However, major modifications such as those listed above may require new operating limitations. Phase I may have to be expanded as well. In August 2012, the National Transportation Safety Board (NTSB) issued safety recommendations concerning a fatal accident of an experimental high-performance aircraft that had undergone extensive modifications. The NTSB noted "the accident airplane had undergone many structural and flight control modifications that were undocumented and for which no flight testing or analysis had been performed to assess their effects on the airplane's structural strength, performance, or flight characteristics. The investigation determined some of these modifications had undesirable effects. For example, the use of a single, controllable elevator trim tab (installed on the left elevator) increased the aerodynamic load on the left trim tab (compared to a stock airplane, which has a controllable tab on each elevator). Also, filler material on the elevator trim tabs (both the controllable left tab and the fixed right tab) increased the potential for flutter because it increased the weight of the tabs and moved their center of gravity aft, and modifications to the elevator counterweights and inertia weight made the airplane more sensitive in pitch control. It is likely that, had engineering evaluations and diligent flight testing for the modifications been performed, many of the airplane's undesirable structural and control characteristics could have been identified and corrected." As part of the probable cause, the NTSB stated "contributing to the accident were the undocumented and untested major modifications to the airplane and the pilot's operation of the airplane in the unique air racing environment without adequate flight testing." As a result of this investigation, the NTSB issued safety recommendations, including requiring "aircraft owners to provide an engineering evaluation that includes flight demonstrations and analysis within the anticipated flight envelope for aircraft with any major modification, such as to the structure or flight controls." Refer to Modifications and Phase I Flight Testing, below.	
10.	Identify Aircraft Version and Sub-Variants	Identify the specific version being certificated. There are major differences between Jet Provost and Strikemaster aircraft, not just in terms of engines but major systems and weapons capability. The BAC 167 Strikemaster Mk88 is an armed version of the Jet Provost T Mk 5; the Strikemaster was modified with a larger engine, wing hardpoints, a strengthened airframe, new communication and navigation gear, improved ejection seats, revised fuel system, and shortened landing gear. First flown in 1967, the aircraft was marketed as a light attack or counter-insurgency aircraft, but most large scale purchasers were air forces wanting an advanced trainer. A total of 146 aircraft were built and approximately 11 aircraft are still flying.	
11.	Approval Basis	Ask whether the applicant knows of the U.K.'s approval basis for the aircraft. If not, notify applicant that adherence to that approval basis is critical for airworthiness certification in the U.S. The original basis of Service acceptance is AvP-970, the type record exists and the design authority now rests with the RAF and support is supplied, if requested, by British Aerospace, Farnborough.	
12.	Major Structural Components	Ask the applicant to identify and document the origin, condition, and traceability of major structural components. For example, documentation of an ex-SAAF BAC 167 Jet Provost and Strikemaster that was imported complete and in good condition should be readily available and comprehensive when compared to an earlier other Air Force Jet Provost and Strikemaster aircraft that assembled from "museum" parts compiled over a long period of time. Additionally, because there is evidence that some Jet Provost and Strikemaster had their wings replaced, or needed their wings replaced, it is important to trace that particular component to determine whether the aircraft was damaged, or if the wing limitations were exceeded at any time. Note: The manufacturer classified airframe under three major headings: discard, replace, and modify. Any reference in the aircraft records to any of these is relevant and should be noted. In addition, the Jet Provost and Strikemaster major components may not be of original manufacture or subcontracted, and therefore, references to other manufacturers are possible.	
13.	Accident History	Ask the applicant to provide any data concerning all accidents and/or incidents involving the aircraft. This includes any knowledge of any such events in military service.	
14.	Airframe and Engine Data	Ask applicants to provide the following: Airframe: export country, N-Number, manufacture year and serial number, airframe time, and airframe cycles. Engine: manufacture date and serial number, overhaul date and location, and engine time and cycles.	
15.	Aircraft Records	Request and review the applicable military and civil aircraft records, including aircraft and engine logbooks. The applicant should produce the military records for the aircraft.	

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16.	RAF Form 700	Request and review the RAF Form 700 (F700) files for the aircraft. This form contains the servicing and flying records for each aircraft. Typically, the pilot would sign for the aircraft on the F700 before each flight. When the flight is complete the pilot would enter the flying time, cycles and any problems with the aircraft. The ground crews enter the servicing that they have completed on the aircraft and sign the F700. It provides a very good record on the operational history of a particular airframe.	
17.	Military Modifications	Ask the applicant to produce the data to indicate whether the aircraft, received any modifications in effect at the time of disposal (1993-1996). This is important to establish a baseline, in terms of condition of the, when it was disposed. There would be difference if the aircraft in question was disposed as a spares source or an operational aircraft.	
18.	UK MRCOA	Ask the applicant whether the aircraft was ever operated in the United Kingdom as a MRCOA (Military-registered, Civilian Owned Aircraft). If so, ask the applicant to produce the associated maintenance, operations, SMS, and QA (required in the UK) requirements. This will assist in determining the requirements and limitations in certificating the aircraft. Operating the aircraft under MRCOA incorporates a high level of safety, because it incorporates an equivalent standard to those required by the United Kingdom's Ministry of Defense.	
19.	Data Plate, Block Number and Serial Number	Verify the military identification plate is installed. Record all information contained on the identification plate. Block number and serial number also need to be identified. In the BAC 167, the construction number (as it is called in the United Kingdom) can be found on at least two locations. The first is in the nose-wheel bay on the rear bulkhead, the second is on the rear bulkhead inside the cockpit on the right hand side.	
20.	Technical Order (TO) 00-5-1, AF Technical Order System	Become familiar with TO 00-5-1, AF Technical Order System, dated May 1, 2011, if applicable. This document provides guidance in the USAF TO system, which may guide much of the documentation associated with the aircraft.	
21.	Aircraft Ownership	Establish and understand the aircraft's ownership status, which sets the stage for many of the responsibilities associated with operating the aircraft safely. There are many cases where former military aircraft are leased from other entities, and this can cloud the process. For example, if the aircraft is leased, the terms of the lease may be relevant as part of the certification because the lease terms may restrict what can be done to the aircraft and its operation for safety reasons.	
22.	FAA Records Review	Review the existing FAA airworthiness and registration files (EDRS) and search the Program Tracking and Reporting Subsystem (PTRS) for safety issue(s) and incidents.	
23.	PTRS Entries for Malfunctions and Defects Reports	Make a PTRS entry if the applicant reports malfunctions and defects. Refer to *Reporting Malfunctions and Defects* below.	
24.	Previous U.K. CAA Registry	Ask the applicant to identify whether the aircraft was previously registered in another country. This is important because safety related issues and requirements may have been identified for those aircraft in terms of airworthiness and operating limitations.	
25.	Aircraft Discrepancies	Ask the applicant to provide all available aircraft discrepancies records. Review those records for issues identified and corrective actions taken. Such a review will assist in assessing the aircraft's condition and how it was operated in the past.	

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26.	FAA Form 8100-1	Use FAA Form 8100-1, Conformity Inspection Record, to document the airworthiness inspection. Using this form facilitates the listing of relevant items to be considered, those items' nomenclature, any reference (that is, NATO manual; FAA Order 8130.2, Airworthiness Certification of Aircraft and Related Products; regulations) revision, satisfactory or unsatisfactory notes, and comments. Items to be listed include but are not limited to— 1. FAA Form 8130-6; 2. 14 CFR § 21.193; 3. FAA Form 8050-1, Aircraft Registration Application; 4. 14 CFR § 45.11(a); 5. FAA Order 8130.2, paragraphs 4002a(7) and (10), 4002b(5), 4002b(6), 4002b(8), 4111c, and 4112a(2); 6. 14 CFR § 91.205; 7. § 91.417(a)(2)(i), airframe records and total time, overhaul; and 8. § 91.411/91.413, altimeter, transponder, altitude reporting, static system test.	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
27.	Airframe and Engine Data	Ask the applicant to provide the following: Airframe: • Export country (if applicable), • N-Number, • Manufacture year and serial number, and • Airframe time and airframe cycles. Engine: • Type and variant, • Manufacture date and serial number, and • Overhaul data, location, provider, and engine time and cycles. Properly identifying the relevant and basic characteristics of the airframe and the engine are necessary to address the safety issues with the aircraft. The following excerpt from an NTSB report on a former military jet accident illustrates the seriousness of adequate records: "On May 15, 2005, a British Aircraft Corporation 167 Strikemaster MK 83, N399WH, registered to DTK Aviation, Inc., collided with a fence during an aborted takeoff from Boca Raton Airport, Boca Raton, Florida. The airplane was substantially damaged and the commercial-rated pilot and passenger sustained minor injuries. The pilot initially stated he performed a preflight inspection of the aircraft which included a flight control continuity check. He had the passenger disable the gust lock for the flight controls. He performed a flight control continuity check before taxiing onto the runway for takeoff; no discrepancies were reported. The takeoff roll commenced and at the calculated rotation speed (70 knots), he '...began to apply pressure to stick and noticed an unusual amount of load on the controls. I made a quick trim adjustment to ensure that the forces on the stick were not the results of aerodynamic loads. When the trim changes yielded no change, I initiated an abort (at approximately Vr at 80 knots) by retarding the throttle, extending the speed brakes, and applying the wheel brakes.' He notified the tower of the situation, briefed the passenger, and raised the flaps. He also opened the canopy after realizing that he was unable to stop on the runway. The airplane traveled off the end of the runway, rolled through a fence and came to rest upright. The pilot also stated that the airplane is kept outside on the ramp at the Boca Raton Airport. Examination of the airplane by an FAA operations inspector before recovery revealed the control column would only move aft between 1/4 and 1/2 inch. No determination was made as to the position of the control lock in the cockpit. Examination of the airplane following recovery by an FAA airworthiness inspector revealed that the elevator was free to travel through the full range but was noted to be '...very stiff.' Additionally, the rudder was '...extremely hard to move in either direction." During movement of the elevator flight control surface, the rudder flight control surface was noted to move, and with movement of the rudder flight control surface, the elevator flight control surface was noted to move. A review of a United Kingdom Civil Aviation Authority (U.K. CAA) Mandatory Permit Directive (MPD) No. 2002-001 R1, issued on January 16, 2003, indicates "partial binding or complete seizure of the elevator/rudder concentric torque tube bearings causing an interconnect between elevator and rudder control systems. This interconnection has resulted in un-commanded rudder movement with the application of elevator control inputs and vice versa. Investigation has determined that bearing seizure was due to inadequate lubrication and water ingress in the elevator torque tube bearings. Aircraft subject to external storage are particularly prone to this occurrence. A review of the airplane maintenance records revealed the airplane was last inspection on June 29,2004, in accordance with, '...the scope and detail of the inspection program approved by the FSDO for BAC Strikemaster dated June 29, 2001, and found it to be in safe operating condition at this time.' The logbook entry does not indicate airplane total time; therefore, the time since the inspection was not determined. There was no record that U.K. CAA MPD No. 2002-001 R1 had been complied with."	
28.	Functionality Check	Ask the applicant to prepare the aircraft for flight, including all preflight tasks, startup, run-up, and taxi.	
29.	Accident and Incident Data System	Review the NTSB accident database and the FAA's Accident and Incident Data System for the aircraft type accidents and incidents. Refer to http://ntsb.gov and http://www.asias.faa.gov.	
30.	Accident and Incident History	Ask the applicant to provide any data concerning all accidents and/or incidents involving the aircraft.	

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31.	Adequate Manuals and Related Documentation	Ensure the existence of a complete set of the applicable military manuals (that is, USAF, NAVAIR, NATO), such as flight manuals, inspections and maintenance manuals, and engine manuals. Typically, this may involve over 100 such documents. An operator should also have the applicable TOs to address known issues related to airworthiness, maintenance, and servicing.	
32.	Operational Supplements	Ensure the owner/operator has a complete set of the applicable military manuals (that is, USAF, NAVAIR, NATO) operational supplements to safely operate a former military high-performance aircraft.	
33.	Availability of Documents Listed in the Applicable Aircraft List of Applicable Publication Manual	Review the aircraft inspection program (AIP) to verify compliance with the applicable version of the aircraft list of applicable publication manuals or equivalent document. Ensure the existence of a complete set of the applicable manuals (SAF or NATO), such as flight manuals (Pilot Notes), inspection and maintenance manuals, and engine manuals. An operator also needs to have the applicable technical orders (TO) to address known issues related to airworthiness, maintenance, and servicing. Note: The use of and reference to RAF manuals are made in this document because they represent an equivalent to the acceptable U.S. Air Force (USAF) or NATO references. Examples of BAC 167 /Rolls-Royce manuals include: • Maintenance - (required by U.K.CAA to match a specific airplane) The applicant has a complete library of relevant Air publications covering all aspects of servicing and ground handling as follows: • Servicing manual BAC 167 (Mk82A) 1A and 1 B • Illustrated parts catalogue BAC 167 - 3 • Servicing schedule BAC 167 - 5 • Repair manual BAC 2306 All Marks • Company Technical instructions BAC 167 - 12 • Service Bulletins BAC 167 - 13	
34.	Applicant/Operator Capabilities	Review the applicant/operator’s capabilities, general condition of working/storage areas, availability of spare parts, and equipment.	
35.	Scope and Qualifications for Restoration, Repairs, and Maintenance	Familiarize yourself with the scope of the restoration, repairs, and maintenance conducted by or for the applicant.	
36.	Limiting Duration of Certificate	Refer to § 21.181 and FAA Order 8130.2, regarding the duration of certificates, which may be limited. An example would be to permit operations for a period of time to allow the implementation of a corrective action or changes in limitations. In addition, an ASI may limit the duration if there is evidence additional operational requirements may be needed at a later date.	
37.	Compliance With § 91.319(a)(1)	Inform the operator that the aircraft is limited under this regulation. The aircraft cannot be operated for any purpose other than the purpose for which the certificate was issued. For example, in the case of an experimental exhibition certificate, the certificate can be used for air show demonstrations, proficiency flights, and flights to and from locations where the maintenance can be performed. Such a certificate is NOT IN EFFECT for flights related to providing military services (that is, air-to-air gunnery, target towing, electronic countermeasures (ECM) simulation, cruise missile simulation, and air refueling). Also refer to *Military/Public Aircraft Operations,* below.	
38.	Multiple Certificates	Ensure the applicant submits information describing how the aircraft configuration is changed from one to the other in those cases involving multiple airworthiness certificates. This is important because, for example, some research and development (R&D) activities may involve equipment that must be removed to revert back to the exhibition configuration (refer to *R&D Airworthiness Certification* below). Moreover, the procedures should provide for any additional requirement(s), such as additional inspections, to address situations such as high-G maneuvering that could impact the aircraft and/or its operating limitations. Similarly, it should address removing R&D equipment that could be considered part of a weapon system (refer to *Demilitarization* below). All applications for an R&D certificate must adhere to FAA Order 8130.29, Issuance of a Special Airworthiness Certificate for Show Compliance and/or Research and Development Flight Testing.	

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39.	Public Aircraft Operations, State Aircraft Operations, Military Support Missions, DOD contracts	The special airworthiness certificate and attached operating limitations for this aircraft are not in effect during public aircraft operations (PAO) as defined by Title 49 of the United States Code (49 U.S.C.) §§ 40102 and 40125. They are also not in effect during state aircraft operations, typically military support missions or military contracts. Aircraft used in military services are deemed state aircraft. Also refer *to Operations Overseas,* below.	
40.	Re-Conforming to Civil Certificate	Ensure the aircraft is returned, via an approved method, to the condition and configuration at the time of airworthiness certification following a public, state, or military aircraft operation. This action must be documented in a log or daily flight sheet. Ensure the applicant submits information describing how the aircraft configuration is changed from PAO, state aircraft, or other non-civil classification or activity back to a civil certificate. This is important because, for example, some military support activities may involve equipment or maneuvers that must be removed or mitigated to revert back to original Exhibition or R&D configuration. Moreover, the procedures should provide for any additional requirement(s), such as additional inspections, to address situations such as high-G maneuvering and sustained Gs that could have an impact on the aircraft and/or its operating limitations. Similarly, it should address removing equipment that could be considered part of a weapon system. Refer to *Demilitarization,* below.	
41.	R&D Airworthiness Certification	R&D certification requires a specific project. Ensure the applicant provides detailed information such as— • Description of each R&D project providing enough detail to demonstrate it meets the regulatory requirements of § 21.191(a); • Length of each project; • Intended aircraft utilization, including the number of flights and/or flight hours for each project; • Aircraft configuration; • Area of operation for each project; • Coordination with foreign CAA, if applicable; and • Contact information for the person/customer that may be contacted to verify this activity. Note: All applications for an R&D certificate should include review of FAA Order 8130.29.	
42.	Demilitarization	Verify the aircraft has been adequately demilitarized. This aircraft must remain demilitarized for all civil operations. Refer to the applicable technical guidance.	
43.	Modifications	Ask whether the aircraft was modified from the original configuration and by whom? This is important because the Jet Provost, Strikemaster program resulted in many upgrades and do they have data acceptable to the Administrator to show conformity for safe flight.	
44.	Safety Discretion	The field inspector may add any requirements necessary for safety. Under existing regulations and policies, FAA field inspectors have discretion to address any safety issue that may be encountered, whether or not it is included in the job aid. Of course, in all cases, there should be justification for adding requirements. In this respect, the job aid provides a certain level of standardization to achieve this, and in addition, AIR-200 is available to coordinate a review (with AFS-800 and AFS-300) of any proposed limitations an inspector may consider adding or changing. 49 U.S.C. § 44704 states before issuing an airworthiness certificate, the FAA will find that the aircraft is in condition for safe operation. In issuing the airworthiness certificate, the FAA may include terms required in the interest of safety. This is supported by case law. 14 CFR § 21.193, Experimental Certificates: General, requires information from an applicant, including, “upon inspection of the aircraft, any pertinent information found necessary by the Administrator to safeguard the general public.” 14 CFR § 91.319 Aircraft Having Experimental Certificates: Operating provides “the Administrator may prescribe additional limitations that the Administrator considers necessary, including limitations on the persons that may be carried in the aircraft.” Finally, FAA Order 8130.2, chapter 4, Special Airworthiness Certification, effective April 16, 2011, also states the FAA may impose any additional limitations deemed necessary in the interest of safety.	

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45.	Overall Airworthiness and 2006 BAC 167 Strikemaster, VH-AKY Accident Aviation Occurrence Investigation-200605843 Australian Government	The importance of considering the issues discussed in this ATSB accident report is best illustrated by the following: In-flight break-up, "Right wing had separated from fuselage in flight." "The vertical stabilizer attachment points had been fractured in overload." "Fracture surfaces and compression ripples on the left side of the tailplane showed that the fin had experienced sever air loads …". "The aircraft rudder had broken into three pieces, …". Spar lug cracking (page 64 of the report) "The two areas of cracking within the upper lug connection were confirmed as pre-existing fatigue cracks …". "…the crack surfaces suggested an extended period of comparatively slow growth."	
46.	2009 Crash of ZU-BEX	Recommend the accident report concerning the 2009 Lightning T5 ZU-BEX be reviewed in detail. This report, published by the South African CAA in August 2012, provides valuable insight into the consequences of operating complex and high-performance former military aircraft in an unsafe manner. The relevant issues identified in the report include (1) ignoring operational history and accident data, (2) inadequate maintenance practices, (3) granting extensions on inspections, (4) poor operational procedures, and (5) inadequate safety oversight. Many of the issues discussed and documented in the accident investigation report are directly relevant to safety topics discussed in this document. The South African CAA report can be found at http://www.caa.co.za/.	
47.	Importation	Review any related documents from U.S. Customs and Border Protection and the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) for the aircraft. If the aircraft was not imported as an aircraft, or if the aircraft configuration is not as stated in Form ATF-6, it may not be eligible for an airworthiness certificate. There are many cases in which Federal authorities have questioned the origin of former military aircraft and its installed weapon system. Some have been seized. For example, two T-28s were seized at the Canadian border by U.S. Customs officials in 1989. Refer to Federal Firearms Regulations Reference Guide, ATF Publication 5300.4, Revised September 2005, for additional guidance. If an aircraft is imported for purposes such as display, parts or scrap, it is not eligible for an airworthiness certificate.	
48.	Brokering	Verify the application for airworthiness does not constitute brokering. Section 21.191(d) was not intended to allow for the brokering or marketing of experimental aircraft. This includes individuals who manufacture, import, or assemble aircraft, and then apply for and receive experimental exhibition airworthiness certificates so they can sell the aircraft to buyers. Section 21.191(d) only provides for the exhibition of an aircraft's flight capabilities, performance, or unusual characteristics at air shows, and for motion picture, television, and similar productions. Certificating offices must verify all applications for exhibition airworthiness certificates are for the purposes specified under § 21.191(d) and are from the registered owners who will exhibit the aircraft for those purposes. Applicants must also provide the applicable information specified in § 21.193.	
49.	Federally Obligated Airport Access	Inform the operator that BAC 167 operations may be restricted by airports because of safety considerations. As provided by Title 49 of the United States Code (U.S.C.) § 47107(a), a federally obligated airport may prohibit or limit any given type, kind, or class of aeronautical use of the airport if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public. Additionally, per FAA Order 5190.6A, the airport should adopt and enforce adequate rules, regulations, or ordinances as necessary to ensure safety and efficiency of flight operations and to protect the public using the airport. In fact, the prime requirement for local regulations is to control the use of the airport in a manner that will eliminate hazards to aircraft and to people on the ground. In all cases concerning airport access or denial of access, and based on FAA Flight Standards Service safety determination, FAA Airports is the final arbiter regarding aviation safety and will make the determination (Director's Determination, Final Agency Decision) regarding the reasonableness of the actions that restrict, limit, or deny access to the airport (Refer to FAA Docket 16-02/08, FAA vs. City of Santa Monica, Final Agency Decision, FAA Order 2009-1, July 8, 2009, and FAA Docket 16-06-09, Platinum Aviation and Platinum Jet Center BMI v. Bloomington-Normal Airport Authority).	
50.	Environmental Impact (Noise)	Inform the applicant/operator that BAC 167 operations may be restricted by airport noise access restrictions and noise abatement procedures in accordance with 49 U.S.C. § 47107. Refer to FAA Order 5190.6, FAA Airport Compliance Manual.	

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51.	Restrictions on Operations Overseas	Inform the applicant/operator that operations may be restricted and permission must be granted by a foreign CAA. The applicable CAA may impose any additional limitations it deems necessary, and may expand upon the restrictions imposed by the FAA on the aircraft. In line with existing protocols, the FAA will provide the foreign CAA any information, including safety information, for consideration in evaluating whether to permit the operation of the aircraft in their country, and if so, under what conditions and/or restrictions. It is also noted any operator offering to use a U.S. civil aircraft with an experimental certificate to conduct operations such as air-to-air combat simulations, ECM, target towing for aerial gunnery, and/or dropping simulated ordinances pursuant to a contract or other agreement with a foreign government or other foreign entity would not be doing so in accordance with any authority granted by the FAA as the State of Registry or State of the Operator. On the issue of operations overseas: ➢ Under international law, the aircraft will either be operated as a civil aircraft or a state aircraft. The aircraft cannot have a combined status. If the aircraft are to be operated with civil status, then they must have FAA-issued airworthiness certificates. If the applicant/operator is seeking experimental certificates for R&D or Exhibition purposes for the aircraft, and if the FAA issues (or renews) those certificates for the aircraft, then the only permissible operation of the aircraft as civil aircraft in a foreign country, is for an R&D or Exhibition purpose. The applicant/operator cannot be allowed to accomplish other purposes during the same operation, such as performing the contract for a foreign air force. This position is necessary to avoid telling an operator that any R&D or Exhibition activity could serve as a cover for a whole host of improper activities using an aircraft with an experimental certificate for R&D or Exhibition purposes, rendering the R&D or Exhibition limitation on the certificate meaningless. ➢ The R&D or Exhibition activity would be a pretext for the real purpose of the operation. Accordingly, in issuing experimental certificates for an R&D or Exhibition purpose, the FAA must make it clear that any other activities or purposes for the operation are outside the scope of permitted operations under the certificate. The FAA must also make clear that the operation as a civil aircraft requires the permission of the foreign civil aviation authority (CAA). In requesting that permission, the applicant/operator should advise the foreign aviation authority that the operation will be for an R&D or Exhibition purpose only and for no other purpose, including performing a contract for any foreign military organization. ➢ The applicant/operator must understand that if the foreign CAA asks FAA about the operation, the FAA will state “that the only permissible purpose of the operation is R&D or Exhibition, and an operation for any other purpose, even when conducted in conjunction with an R&D or Exhibition purpose, is outside the scope of the operations allowed under the certificate. ➢ If the applicant/operator operates the aircraft as state aircraft, then the national government of that country will have designated the aircraft as its state aircraft, and the host country, will have given the aircraft permission to operate through the issuance of a diplomatic clearance. That diplomatic clearance should include whatever terms and conditions that CAA deems necessary or appropriate for the operation. ➢ The aircraft, when operated as state aircraft, does not need an FAA airworthiness certificate, and the pilots of those aircraft do not need to hold FAA-issued airman licenses. ➢ If a country issues a diplomatic clearance for the operation of the aircraft, the aircraft would be deemed to be a state aircraft of the country requesting that clearance. Safety oversight would rest with the country that requested the diplomatic clearance.	

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52.	Initial Contact Checklist	The following is a sample of the contents of an initial contact by an FAA field office to an applicant concerning a proposed certification. It addresses many of the major safety and risk issues with the aircraft and will assist in (1) preparing an airworthiness applicant, (2) making corrections and updating any previous application, and (3) documenting the level of airworthiness review. 1. Discuss item missing from the application. a. Program letter setting the purpose for which the aircraft will be used. i. Exhibition of aircraft flight capabilities, performance, unusual characteristics at air shows, motion picture, television and similar productions, and maintenance of exhibition flight proficiency, including flying to and from such air shows and productions. ii. Aircraft cannot be certified if the intention is to broker or sell the aircraft. iii. Aircraft photos. 2. Prepare aircraft and documentation for FAA inspection. a. Maintenance and modification records. b. Aircraft history and logbooks (airframe, engine, and components). c. Have the aircraft maintenance program ready for review and acceptance. d. Have operations and maintenance and supplements. e. Have crew qualifications ready for review (pilot, mechanics, A&P, IA). f. Be prepared to show spare parts records. g. Be prepared to accomplish preflight, ground checks, run-up, and taxi checks. h. Be prepared to demonstrate the aircraft has been demilitarized. i. Have records on status of ejection seats. j. Be prepared to discuss required ground support equipment and specialized tooling for maintenance. k. Be prepared to discuss and document the airframe fatigue life program compliance. l. Be prepared to discuss engine thrust measurement process. m. Be prepared to demonstrate oxygen system checks. n. If "G" suits are used be prepared to demonstrate serviceability. o. Have records for any fabricated parts and engineering documentation if required. p. Have records on flight control balancing. q. Have weight and balance records. r. Be prepared to discuss external stores. s. Be prepared to discuss Phase I test flights (recommended 10 hours). t. Have record of installed avionics. 3. Applicable regulations and ACs. a. §§ 21.93, 21.181, 21.193, 21.191(d), 23.1441, 43.3, 43.9, 45.11, 45.23(b), 45.25, 45.29, 91.205, 91.307, 91.319(a)(1), 91.407, 91.409(f)(4), 91.411, 91.413, 91.417, 91.1037, 91.1109, and AC 43-9, AC 91-79. 4. Items to discuss with applicant. a. Recommendation of establishing a minimum equipment list. b. Recommend establishing minimum pilot experience and proficiency, including (1) FAA PIC policy, NAVAIR training, (2) 10 to 15 hours of dual time, and (3) 3 hours per month, and five takeoffs and landings. c. Recommend establishing minimum runways length criteria for takeoff and landing. d. Discuss military use, that is, declaration of public use operations (PAO) and operating limitations.	

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Maintenance Manual(s), Aircraft Inspection Program (AIP), and Servicing			
53.	Changes to Aircraft Inspection Program (AIP)	Consider whether the FAA-accepted AIP is subject to revisions to address safety concerns, alterations, or modifications to the aircraft. Section 91.415, Changes to Aircraft Inspection Programs, requires “whenever the Administrator finds that revisions to an approved aircraft inspection program under § 91.409(f)(4) or § 91.1109 are necessary for the continued adequacy of the program, the owner or operator must, after notification by the Administrator, make any changes in the program found to be necessary by the Administrator.” As provided by § 91.415, review the submitted maintenance manual(s) and AIP. Work with the applicant to revise the AIP as needed based on any concerns identified in this table (Attachment 2). For example, an AIP can be modified to address or verify— • Consistency with the applicable military TOs for airframe, powerplant, and systems to verify replacement/interval times are addressed. • All AIP section and subsections include the proper guidance/standards (that is, TOs or Engineering Orders) for all systems, groups, and tasks. • No “on condition” inspections for items that have replacement times unless proper technical data to substantiate the change, that is, aileron boost and oxygen regulator. • Ejection seat system replacement times are adhered to. No “on condition” inspections for rocket motors and propellants. Make the distinction between replacement times, that is, “shelf life” vs. “installed life limit.” • Any deferred log is related to a listing of minimum equipment for flight (refer to *Minimum Equipment for Flight* below, and AFI 21-103); and • Inclusion of document revision page(s).	
54.	AIP Is Not a Checklist	Ensure the AIP stresses it is not a checklist. This is important in many cases because the actual AIP is only a simple checklist and actual tasks/logbook entries say little of what was actually accomplished and to what standard. This is one of the major issues with some FAA-approved inspection programs, and stems from confusion about the different nature of (1) aircraft maintenance manuals, (2) AIPs, and (3) inspection checklists. Unless a task or item points to technical data (not just a reference to a manual), it is simply a checklist, not a manual. Ensure the AIP directs the reader to other references such as technical data, including references to sections and pages within a document (and revision level), that is, “AC 43-13, p.318” or “inspection card 26.2.” Records must be presented to verify times on airframe and engines, inspections, overhauls, repairs, and in particular, time in service, time remaining and shelf life on life limited parts. It is the owner’s responsibility to ensure these records are accurate. Refer to Classic Jet Aircraft Association (CJAA) Safety Operations Manual, rev. 6/30/08.	
55.	AIP Limitations	Refrain from assuming compliance with the applicable military standards, procedures, and inspections are sufficient to achieve an acceptable level of safety for civil operations, as part of the airworthiness certification and related review of the AIP. This may not be true, depending on the situation and the aircraft. For example, an AIP based on 1978 USAF or NAVAIR requirements does not necessarily address the additional concerns or issues 35 years later, such as aging, structural and materials deterioration, stress damage (operations past life limits), extensive uncontrolled storage, new techniques, and industry standards.	
56.	AIP Revision Records	Ensure the applicant/operator retains a master list of all revisions that can be reviewed in accordance with other dated material that may be required to be done under a given revision. The AIP should address revision history for manual updates and flight log history.	
57.	Maintenance Responsibilities	Ensure the AIP addresses responsibilities, and functions in a clear manner. The AIP should address the difference between the aircraft owner and operator. The AIP should also address any leasing arrangement where maintenance is spilt or otherwise outside of the control of the applicant, that is, where maintenance is contracted to another party. The AIP should define the person responsible for maintenance. The AIP should address qualifications and delegations of authority, that is, whether the person responsible for maintenance has inspection authority and airworthiness release authority, or authority to return for service. In terms of inspection control and implementation, the AIP should define whether it is a delegation of authority, and if so, what authority is being delegated by the owner and operator. This has been an issue with the NTSB (and the Civil Aeronautics Board before it) since 1957.	

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58.	Qualifications for person returning the aircraft to service	The AIP should clearly define who can return the aircraft to service and provide the descriptions of minimum qualifications for this authority. Follow the intent and scope of § 43.5 (Approval for return to service after maintenance, preventive maintenance, rebuilding, or alteration) and (43.7 Persons authorized to approve aircraft, airframes, aircraft engines, propellers, appliances, or component parts for return to service after maintenance, preventive maintenance, rebuilding, or alteration).	
59.	Maintenance Practices	Consider AC 43.13-2, Acceptable Methods, Techniques, and Practices-Aircraft Alterations, and AC 43.13-1, Acceptable Methods, Techniques, and Practices-Aircraft Inspection and Repair, in addition to any guidance provided by the manufacturer/military service(s), to verify safe maintenance practices, airframe limit and how total time, fatigue life, and cycles are tracked/kept/recorded and the status of any extension and limitations. Fatigue index meters are mounted behind the right seat in the cockpit and must be operational. Many BAC 167 Jet Provosts and Strikemasters that were retired from military service because their fatigue life had expired. The RAF chose to retire their airplanes on fatigue rather than pay to re-wing them.	
60.	Qualifications for Inspections	Ensure only FAA-certificated repair stations and FAA-certificated mechanics with appropriate ratings as authorized by § 43.3 perform inspections on the aircraft.	
61.	Modifications	Verify major changes conform to the applicable guidance (that is, RAF, or NATO) and do not create an unsafe condition. Determine whether new operating limitations may be required within the scope and intent of § 91.319(b)(2). In addition, the information contained in appendix A to part 43 can be used as an aid. Refer to *Potential Reversion Back to Phase I,* above.	
62.	Modifications and Modification State	Ask the applicant to provide data concerning the modification status of the aircraft. The applicant should compare the modification state of the aircraft with those required for airworthiness according to the manufacturer and military Master Modifications List. This ensures that a satisfactory standard has been achieved.	
63.	Modifications and Supporting Data	Per § 91.319(b)(2), verify major changes do not create an unsafe condition and determine whether new operating limitations will be required. The information contained in appendix A to part 43 can be used as an aid. It should not be assumed that a missing manufacturer/military operator (RAF, Singapore Air Force, SAAF) time-critical requirement, fatigue limit, or a modification not performed is acceptable because the aircraft is “experimental.” Non-compliance with a time-critical requirement can be a serious safety of flight issue, potentially jeopardizing the airworthiness of the aircraft. Note: Certain modifications to the aircraft will invalidate Phase II. These include: (a) structural modifications, (b) aerodynamic modifications, including externally mounted equipment except as permitted in the limitations issued, and (c) change of engine make, model, or power rating (thrust or horse power)- refer to Engine Upgrades, below. If any of these modifications are made, adequate technical data must be available. It is necessary to verify that adequate technical data, that is, engineering data and /or manufacturer, RAF or other Air Force guidance supports modifications such as engine upgrades, pylons, and structural reinforcements and does not affect total time, fatigue life and cycles.	
64.	Aircraft Storage and Returning the Aircraft for Service After Inactivity	Verify the applicant has a program to address aircraft inactivity and specifies specific maintenance actions for return to service per the applicable inspection schedule. For example, if the aircraft has not flown in 30 days, a daily inspection does not suffice. The applicable RAF/SAAF/NATO/BAC guidance is to be followed. If not available, reference and use of an applicable USAF or U.S. Navy standard should take over, to include inspection by qualified ground personnel. The aircraft should be housed in a hangar during maintenance. When the aircraft is parked in the open it must be protected from the elements, that is, full blanking kit and periodic anti-deterioration checks are to be carried out as weather dictates.	
65.	Specialized Tooling for BAC 167 Maintenance	Verify adequate tooling, jigs, and instrumentation are used for the required inspections and maintenance per the appropriate maintenance manuals and revision.	
66.	Technical Orders Issued While in Service	Verify the AIP references and addresses the applicable RAF/SAF/NATO TOs issued to the this airplane during military service to address airworthiness and safety issues, maintenance, modifications, updates to service instructions, and operations of the aircraft.	

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67.	Time Critical Technical Orders (TCTOs) or SAF/NATO Equivalent	Verify the AIP specifically accounts for, addresses, and documents the applicable TCTOs issued to the BAC 167, while in service. Compliance with the TCTOs is essential for safe operations. If the AIP only makes reference to a few TCTOs issued in 1978, for example, it would not be adequate.	
68.	RAF/SAF/NATO BAC 167 Safety Supplements	Verify the applicant/operator has copies of the applicable safety supplements for the correct airplane and they are incorporated into the AIP or operational guidance as appropriate. The most current version of the Airplane Flight Manual (AFM) (or "-1", the TO number for AFM) usually provides a listing of affected safety supplements and this can be used as a reference.	
69.	Corrosion Due to Age and Inadequate Storage	Evaluate adequacy of corrosion control procedures. Age, condition, and types of materials used in the BAC 167 may require some form of corrosion inspection control. Ask whether a corrosion control program is in place. If not, ask for steps taken or how it is addressed in the AIP. Recommend the use of TO 1-1-691, Corrosion Prevention and Control Manual.	
70.	Adequate Maintenance Schedule and Program (That is, USAF TO -6-1)	Ensure the AIP follows the applicable requirements, as appropriate (that is, USAF, NAVAIR, NATO, or RAF), concerning inspections. For example, under USAF standards, the proper reference is the most current version of USAF TO -6-1, Aircraft Scheduled Inspection and Maintenance Requirements. This is important when developing an inspection program under § 91.409. The inspection program must comply with both hourly and calendar inspection schedules. The only modifications to the military AIP should be related to the removal of military equipment and weapons. Deletions should be properly documented and justified. A 100-hour, 12-month inspection program under appendix D to part 43 may not be adequate.	
71.	Change in Serviceability Log	Ask applicant to provide the Change in Serviceability Logs for the aircraft. These documents are essential in determining the history of all failures, reasons for non-airworthy determinations, repairs and deferments. Also ask for BAC fatigue life limits for the airplane, the airplanes fatigue life cycles, and that data that the fatigue index meters are working.	
72.	Airframe, Engine, and Component Replacement Intervals	Verify compliance with required replacement intervals as outlined in appropriate and most current military inspection guidance. If components are not replaced per the military guidance, ask for data to justify extensions. Applicants should establish and record time-in-service for all life-limited components and verify compliance with approved life limits. Set time limits for overrun of intervals and track cycles. Evaluate any overruns of inspection or maintenance intervals.	
73.	Engine Upgrades	Permit engine upgrades only if there is manufacturer's data on the upgrade. No homemade upgrades should be permitted. Upgrading the Jet Provost, Strikemaster Viper engine from one version to another is not a simple task and will require data acceptable to the administrator.	
74.	Missing Inspection Tasks	Verify the AIP follows the applicable requirements (that is, USAF, NAVAIR, NATO, or RAF) in terms of inspection tasks. It is imperative that no inspection tasks required by the military standard are removed. If they are removed, there should be adequate justification, and removal cannot be solely cost-related. There have been several cases where an AIP did not conform to the applicable military standard and tasks were removed without adequate justification.	
75.	Drag Chute	If a drag chute is installed, verify it is done per the applicable guidance and the AIP reflects that installation. There should be adequate technical data to validate the installation.	
76.	Appendix G to 14 CFR Part 23	Recommend appendix G to part 23 be used as a tool (not a requirement) because it can assist in the review of the applicant's proposed AIP and associated procedures. It also sets a good baseline for any review. NAVAIR guidance should also contain instructions for the continued airworthiness of the aircraft. Appendix G to part 23 covers instructions for continued airworthiness.	
77.	Prioritize Maintenance Actions	Recommend the adoption of a risk management system that reprioritizes high-risk maintenance actions in terms of (a) immediate action, (b) urgent action, and (c) routine action. Also refer to *Recordkeeping, Tracking Discrepancies, and Corrective Action,* below.	

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78.	Cannibalization	Cannibalization is a common practice for several former military aircraft operators and service providers. The extent to which it takes place is not necessarily an issue, but keeping adequate records of the transfers, uses, and condition is. In 2001, the U.S. Government Accountability Office (GAO) published its findings on cannibalization of aircraft by the U.S. Department of Defense (DOD). It found cannibalizations have several adverse impacts. They increase maintenance costs by increasing workloads and create unnecessary mechanical problems for maintenance personnel. The GAO also found that with the exception of the Navy, the services do not consistently track the specific reasons for cannibalizations. In addition, a U.S. Navy study found cannibalizations are sometimes done because mechanics are not trained well enough to diagnose problems or because testing equipment is either not available or not working. Because some view cannibalization as a symptom of spare parts shortages, it is not closely analyzed, in that other possible causes or concerted efforts to measure the full extent of the practice are not made.	
79.	Recordkeeping, Tracking Discrepancies, and Corrective Action	Check applicant recordkeeping. The scope and content of §§ 43.9, 43.11, and 91.417 are acceptable. Recommend the use the USAF Form 781 process (or NAVAIR MAF, or RAF Form 700) to help verify an acceptable level of continued operational safety (COS) for the aircraft. Three types of maintenance discrepancies can be found inside USAF Form 781: (1) an informational, that is, a general remark about a problem that does not require mitigation; (2) a red slash for a potentially serious problem; and (3) a red "X" highlighting a safety of flight issue that could result in an unsuccessful flight and/or loss of aircraft—no one should fly the aircraft until the issue is fixed. For more information on recordkeeping, refer to AC 43-9, Maintenance Records.	
80.	Qualifications of Maintenance Personnel	Check for appropriate qualifications, licensing, and type-specific training of personnel engaged in managing, supervising, and performing aircraft maintenance functions and tasks. The NTSB has found using non-certificated mechanics with this type of aircraft has been a contributing factor to accidents. Only FAA-certificated repair stations and FAA-certificated mechanics with appropriate ratings as authorized by § 43.3 perform maintenance on this aircraft.	
81.	Ground Support, Servicing, and Maintenance Personnel Recurrent Training	Recommend regular refresher training be provided to ground support, servicing, and maintenance personnel concerning the main safety issues surrounding servicing and flight line maintenance of the aircraft. Such a process should include a recurrent and regular review of the warnings, cautions, and notes listed in the appropriate technical manuals. Note: Ejection seat safety is paramount.	
82.	RAF Major Servicing	Recommend the AIP incorporates RAF guidance concerning aircraft maintenance practices in AP 3456E Part 2, Section 1, Chapter 1, dated February 1, 1971. These include: a. ***Primary***. Each period of 50 flying hours or at intervals of one month. This servicing includes an examination of the aircraft obvious defects, together with essential functional checks and lubrication of certain equipments. b. ***Minor***. Each period of 200 flying hours or at intervals of four months. This servicing includes an examination of the aircraft for defects, deterioration, corrosion and wear, and the lubrication of certain parts to a greater degree than is normally done at a primary servicing. It affords the opportunity to carry out modifications, Special Technical Instructions (STIs) and Servicing Instructions (Sis) which may not have been implemented during the day-to-day servicing. c. ***Major***. Each period of 800 flying hours or at intervals of twelve months. This servicing includes a detailed examination of the aircraft, the changing of worn parts and adjustment or calibration of equipment necessary to maintain the required standards, in addition to the work which is normally done at minor servicing. (AP 3456E Part 2, Sect 1,Chap 1 Feb71)	
83.	Parts Storage and Management and Traceability	Recommend establishing a parts storage program that includes traceability of parts. This is important in many cases because there may be no original equipment manufacturer (OEM) support.	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
84.	General Parts Suitability	Recommend the AIP provide for the evaluation of parts for installation on the aircraft. In addition to reviewing applicable records, further evaluation should be performed using the following applicable methods, means or data sources: 1. If applicable, differences between military and civil version (possible military modification, alteration, repair performed); 2. Current manufacturer's or military technical data and procedures to perform tests and inspections including current life limited parts list (hours, cycles, fatigue, date of mfg, date of manufacture); 3. Comparison of military time and/or cycle count for accumulated operational time versus civil; 4. Non-destructive tests, as required; 5. Bench testing or functional test, as required; 6. Results of tests and inspection recorded; 7. Complete historical and modification/alterations/repair records; 8. Manufacturer's identification plate; 9. Flight, maintenance, and/or structural manual(s), and illustrated parts catalog; and 10. Instructions for continued airworthiness.	
85.	Maintenance Records and Use of Tech Data	Conduct a detailed inspection of maintenance records, as required by FAA Order 8130.2. Verify maintenance records reflect inspections, overhauls, repairs, time-in-service on articles, and engines. Ensure all records are current and appropriate technical data is referenced. This should not be a cursory review. Maintenance records are commonly inadequate or incomplete for imported aircraft.	
86.	Airframe Limitations and Durability	Verify whether the AIP addresses the aircraft's airframe limit, how total time is kept, and the status of any extension. Verify the appropriate data is available to consider an extension past the life limit for the airframe and wings.	
87.	"On Condition" Inspections	Adhere to the military/manufacturer program and/or provide adequate data to justify that practice for the applicable part or component if "on condition" inspections are considered. "On condition" must reference an applicable standard (that is, inspect the fuel pump to an acceptable reference standard, not just "it has been working so far"). Each "on condition" inspection must state acceptable parameters. "On condition" inspections are not appropriate for all parts and components.	
88.	Aging	Verify the AIP addresses the age of the aircraft (remember that BAC 167 age is not just the date of manufacture). This means many, if not all, of the age effects have an impact on the aircraft, including: (1) dynamic component wear out, (2) structural degradation/corrosion, (3) propulsion system aging, (4) outdated electronics, and (5) expired wiring.	
89.	Complied With Applicable U.K. STI and SI	Ensure the applicant and AIP show that the safety issues contained in the applicable United Kingdom's STI's (Special Technical Instructions) and SI's (Special Instructions) have been addressed.	
90.	Airframe, Engine and Component Replacement Intervals	Verify compliance with required replacement intervals as outlined in appropriate and most current RAF/SAF/NATO inspection guidance. If components are not replaced per the military guidance, ask for data to justify extensions. Applicants should establish and record time in service for all life-limited components and verify compliance with approved life limits. A critical component with an expired fatigue life cannot be re-introduced after an "On Condition" inspection. Set time limits for overrun of intervals (sometimes called 'Tolerance' in SAF parlance) to those approved by the RAF and track cycles as required, like the Viper requirements on the engine. Evaluate any overruns of inspection or maintenance intervals, which will be in support of part 21, 43, and 91. Life limit extensions may be approved by the FAA only if the original manufacturer approves and provides documentation supporting the extension. In the case that original manufacturer data is not available, an appropriately qualified DER may provide data to substantiate life limit extension, but the FAA must concur with the results of the data. If inspections or maintenance are overrun, a Special Flight Permit will be requested to fly the aircraft to a location where maintenance can take place.	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
91.	Airframe Limitation	Verify whether the AIP addresses the airframe limit and how total time, fatigue life and cycles are tracked or kept and the status of any extension and limitations. Refer to Airframe Fatigue Life/State Tracking, below. Note: This is an important item because the RAF initiated the retirement of its fleet, in great part because of fatigue cracks found in many Jet Provost, Strikemaster's, especially in the wing's structure.	
92.	Use of Cycles (General)	Recommend the AIP provides for tracking cycles, such as airframe and engine cycles, in addition to time (in hours) and in combination with inspections. This allows for the buildup of safety margins and reliability. In military jet aircraft, there is a relationship between parts failures, especially as they relate to power plants, landing gears, and other systems, and for that reason it is very important to track airframe and engine cycles between failures and total cycles to enhance safety margins. For example, tracking all aircraft takeoffs for full-thrust and de-rated thrust takeoffs as part of the inspection and maintenance program would be a good practice and can assist in building up reliability data. The occurrence of failures can be meaningfully reduced, and cycles can play an important role. When rates are used in the analysis, graphic charts (or equivalent displays) can show areas in need of corrective action. Conversely, statistical analysis of inspection findings or other abnormalities related to aircraft/engine check and inspection periods requires judgmental analysis. Therefore, programs encompassing aircraft/engine check or inspection intervals might consider numerical indicators, but sampling inspection and discrepancy analysis would be of more benefit. A data collection system should include a specific flow of information, identity of data sources, and procedures for transmission of data, including use of forms and computer runs. Responsibilities within the operator's organization should be established for each step of data development and processing. Typical sources of performance information are as follows, however, it is not implied that all of these sources need be included in the program nor does this listing prohibit using other sources of information: • Pilot reports, • In-flight engine performance data, • Mechanical interruptions/delays, • Engine shutdowns, • Unscheduled removals, • Confirmed failures, • Functional checks, • Bench checks, • Shop findings, • Sampling inspections, • Inspection discrepancies, and • Service difficulty reports.	
93.	Inspect and Repair as Necessary (IRAN)	If an IRAN is utilized, verify it is detailed and uses adequate technical data (that is, include references to acceptable technical data) and adequate sequence for its completion if it is proposed. An IRAN must have a basis and acceptable standards. It is not analogous to an "on condition" inspection. It must have an established level of reliability and life extension. An IRAN is not a homemade inspection program.	
94.	Combining Inspection Intervals into One	Set time limits for overrun (flex) of inspection intervals in accordance with the applicable guidance (that is, USAF, NAVAIR, NATO, or RAF).	
95.	Critical Components (CC) (General)	Verify the AIP identifies all the Critical Components (CC), along with their respective limitations (for example, fatigue life) and follows the associated inspections times. For example, a critical component that reaches its fatigue life at 240 hours may need to be scrapped and replaced by a new one, not inspected "On Condition." Any item placed on "On Condition" must have adequate technical data to support that action. Note: if the aircraft is an Ex-Swiss Air Force aircraft, verify that the Swiss inspections and replacement schedules are followed.	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
96.	Aircraft Storage and Returning the Aircraft to Service After Inactivity	Verify the applicant has a program to address aircraft inactivity and specifies specific maintenance actions for return to service per the applicable inspection schedule(s) (for example, after 31 days). The aircraft should be housed in a hangar during maintenance. When the aircraft is parked in the open, it must be protected from the elements, that is, full blanking kit and periodic anti-deterioration checks are to be carried out as weather dictates.	
97.	Equivalent Level of Safety	Ensure classifications and limitations such as Fatigue Life, Reconditioning Life, Bay Servicing, and Scrap, in RAF procedures are not replaced in civilian use by “On Condition” or “Testing.” In the BAC 167, a critical component with an expired fatigue life cannot be re-introduced after an “On Condition” inspection. If any of the RAF procedures are replaced by either “On Condition” or “Testing” there needs be adequate data to show an equivalent level of safety in addition to adequate data. Note: if the aircraft is an Ex-RAF aircraft, verify that the RAF inspections and replacement schedules are followed.	
98.	Specialized Tooling for BAC 167 Maintenance	Verify adequate tooling, jigs, and instrumentation are used for the required periodic inspections and maintenance per the maintenance manuals.	
99.	Technical Orders Issued While in Service	Verify the AIP references and addresses the applicable technical guidance issued to the aircraft during military service to address airworthiness and safety issues, maintenance, modifications, updates to service instructions, and operations of the aircraft.	
100.	Time Critical Technical Orders (TCTOs) or SAF/NATO Equivalent	Verify the AIP specifically accounts for, addresses, and documents the applicable TCTOs issued to this airplane, while in service. Compliance with the TCTOs is essential for safe operations. Check to see if this data has been added to the airplane’s technical manuals and if not how is it accounted for.	
101.	SAF/NATO BAC 167 Safety Supplements	Verify the applicant/operator has copies of the applicable safety supplements for the correct airplane and they are incorporated into the AIP or operational guidance as appropriate. The most current version of the Airplane Flight Manual (AFM) (or “-1”, the TO number for AFM) usually provides a listing of affected safety supplements and this can be used as a reference.	
102.	UK’s Airworthiness Approvals, Including No. 25318, and 26172	Ensure the AIP addresses the issues contained in the United Kingdom’s Airworthiness Approval Note No. 25318. This document addresses— • The safety issues in all U.K. STIs and Sis, • Engine starter modification aka Jet Heritage Modification JH 034, • Fatigue state of the aircraft (the BAC 167 uses Fatigue Index Meters, and service life is determined by stress of use), • Engine cycle usage rate, • Ejection seat safety issues, • Drop tanks and their use. • Weight and Balance (Each A/C is different), • Flight test requirements, • Manuals requirements, and • Limitations.	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
103.	UK CAA Letter to Owners and Operators No. 2775	Recommend the applicant/operator consider LETTER TO OWNERS/OPERATORS NO 2775 issued by the U.K. CAA, dated March 10, 2005. This document discusses and makes recommendations concerning the deficiencies of maintenance performed by civilian entities concerning ex-military aircraft. It states that "following an investigation into a recent aircraft accident the CAA became aware that maintenance of ex-military aircraft of foreign manufacture is being carried out without the most recent service information being available. Owners of aircraft operating under a Permit to Fly are reminded that in order for an aircraft to be properly maintained it is essential that the latest service information, where published, is obtained and that it is taken into account during maintenance of the aircraft. Where an aircraft of foreign origin is to be operated with a Permit to Fly the associated service information must be available in the English language. Organizations who maintain ex-military aircraft and are approved in accordance with BCAR Chapter A8-20 are reminded of their particular responsibilities in this regard. BCAR Chapter A8-20 paragraph 3.8 details what publications and information are expected to be available and how they should be managed. Accountable managers are therefore requested to review their procedures and working practices to ensure that they take due account of their responsibilities in this respect prior to carrying out maintenance."	
104.	Adequate Maintenance Schedule and Program (General)	Ensure the AIP follows BAC/RAF/SAAF/NATO requirements as appropriate concerning inspections. Under BAC/NATO type standards, for example, there is a document specifically concerning inspection schedule and replacement times. This is important when developing an inspection program under § 91.409. The inspection program must comply with fatigue limits and both hourly and calendar inspection schedules. The only modifications to the military AIP should be related to the removal of military equipment and weapons. Deletions should be properly documented and justified. A 100 hour, 12 calendar month inspection program under appendix D to part 43 is generally not adequate for sophisticated aircraft like the BAC 167. There should be evidence that the inspection program conforms to the specific airplane instructions for continuous airworthiness.	
105.	Missing Inspection Tasks	Verify the AIP follows BAC/NATO requirements in terms of inspection tasks. It is imperative that no inspection tasks required by the military standard, that is, AP101B-1300-5A1, are removed. If they are removed, there should be adequate justification, and it cannot be just related to cost. There are been several cases where an AIP does not conform to the applicable military standard and tasks are removed without adequate justification.	
106.	960-Hour Airframe Overhaul (RAF General)	If applicable, verify that the AIP covers the RAF 960-hour airframe overhaul requirement. Note: Overhaul refers to the process of disassembling, cleaning, inspecting, repairing as necessary, reassembling, and testing for approval for return-to-service within the specifications of the manufacturer's overhaul data.	
107.	Maintenance Schedule (BAC/NATO/RAF type)	Verify the AIP incorporates the required maintenance schedule for the aircraft as follows: 75 hour check; minor check at 150 hours; major check at 300 hours; overhaul at 600 hours.	
108.	SAMPLE: Operating Times and Replacement (Permissible) Times Listing	Ensure that the AIP includes all of the Fatigue Limits, Operating Times and Permissible Terms requirements. This is necessary because it represents an acceptable civil application of the RAF/NATO requirements in terms of inspections and replacement time. Sample: These may look like this or include but is not limited to: 1. ENGINE ROLLS ROYCE (Bristol Siddeley Viper) 535 Vol. 1 and 2 — 600 Hours (TBO) Tolerance + 50 S 2. REVIEW A/C MAINTENANCE PROGRAM FOR ACTUALITY — 12 Months 3. ARC REVIEW (BIENNIAL) — 24 Months 4. RECTIFICATION OF ARC COMPLAINTS — 24 Months 5. 100 H / ANNUAL INSPECTION I.A.W. AMP HB-R — 100 Hours/12 Months 6. 100 H ENGINE INSPECTION I.A.W. AMP HB-R — 100 Hours/as Months 7. WEIGHT AND BALANCE I.A.W. TM NO. 73.920-12 — 120 Months 8. PLACARDS INSPECTION — 12 Months 9. 100 H / ANNUAL LUBRICATION SCHEDULE — 100 Hours/12 Months 10. EXTERNAL CORROSION INSPECTION (EVERY 12 MTHS) — 12 Months 11. GENERATOR LH and RH — 600 Hours TBO Tolerance +10%	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant		Notes, Action(s) Taken, and Disposition
		12. LH GENERATOR INSULATION RESISTANCE CHECK	100 Hours/12 Months	
		13. RH GENERATOR INSULATION RESISTANCE CHECK	100 Hours/12 Months	
		14. GENERATOR CONTROL RACK INSTALLATION VISUAL	100 Hours/12 Months	
		15. BATTERY PACK NO.1 and NO. 2 SERVICE	12 Months	
		16. EMERGENCY BATTERY - SERVICE	12 Months	
		17. BATTERY PACK ELECTRO STARTER SYSTEM ICA	12 Months	
		18. ANNUAL ELT CHECK I.A.W. TM-W NR. F 20.140-01	12 Months	
		19. REFOLD STABILIZER PARACHUTE	12 Months	
		20. REFOLD PARACHUTE	2 Months	
		21. EJECTION SEAT MUNITION	36 Months	
		22. EJECTION SEAT PARACHUTE CANOPY and HARNESS	120 Months	
		23. EJECTION SEAT PARACHUTE HARNESS	120 Months	
		24. BOTTLE ANTI-G-SYSTEM - HYDROSTATIC TEST	120 Months	
		25. FIRE EXTINGUISHER LARGE BOTTLE - ULTRASONIC	120 Months	
		26. FIRE EXTINGUISHER LARGE BOTTLE WEIGHT CHECK	24 Months	
		27. FIRE EXTINGUISHER SMALL BOTTLE - ULTRASONIC	120 Months	
		28. FIRE EXTINGUISHER SMALL BOTTLE WEIGHT CHECK	24 Months	
		29. FIRE EXTINGUISHER CARTRIDGE TEST	60 Months	
		30. LH / RH AILERON CONTROL FORKED ROD DYE CHECK	150 Hours/72 Months	
		31. LH / RH AILERON BRACKET DYE CHECK INSPECTION	150 Hours	
		32. FLAPS - EMERGENCY BLOWDOWN FUNCTIONAL TEST	24 Months	
		33. EMERGENCY FLAPS BLOWDOWN BOTTLE - HYDROSTATIC	120 Months	
		34. MICROSWITCH FOLLOW UP SYSTEM INSPECTION	300 Hours/72 Months	
		35. RUDDER BRACKET EDDY CURRENT INSPECTION	600 Hours/120 Months	
		36. LH / RH DROP TANK LIFTING EYE DYE CHECK INSPECTION	150 Hours/72 Months	
		37. FLEXIBLE FUEL LINE AIRFRAME TO ENGINE REPLACEMENT	300 Hours or NDT	
		38. ELEVATOR HYDRAULIC MICROFLITER INSPECTION	300 Hours/72 Months	
		39. AILERON HYDRAULIC MICROFLITER INSPECTION	300 Hours/72 Months	
		40. MAIN HYDRAULIC SYSTEM FILTER ELEMENT	300 Hours/72 Months	
		41. HYDRAULIC PUMP DRIVE SHAFT INSPECTION	300 Hours/120 Months	
		42. FLEXIBLE HOSES ELEVATOR SERVODYNE REPLACEMENT	96 Months	
		43. HYDRAULIC PUMP	600 Hours TBO	
		44. HYDRAULIC PUMP OVERHEAT INSPECTION	100 Hours/12 Months	
		45. LH MLG ACTUATOR PISTON ULTRASONIC INSPECTION	300 Hours/ 120 Months	
		46. RH MLG ACTUATOR PISTON ULTRASONIC INSPECTION	300 Hours/120 Months	
		47. LH / RH MLG SUPPORT AND CASE VISUAL INSPECTION	12 Months	
		48. LH / RH MLG SUPPORT AND CASE ULTRASONIC INSPECTION	600 Hours	
		49. NOSE GEAR TOP CASE VISUAL INSPECTION	12 Months	
		50. NOSE GEAR TOP CASE ULTRASONIC INSPECTION	600 Hours/120 Months	
		51. NOSE GEAR AXLE MAGNAFLUXING INSPECTION	600 Hours/120 Months	
		52. EMERGENCY GEAR BLOWDOWN SYSTEM - FUNCTIONAL	24 Months	
		53. EMERGENCY GEAR BLOWDOWN BOTTLE - HYDROSTATIC TEST	120 Months	
		54. COMPASS SYSTEM DEVIATION CHECK I.A.W. TM-W NR.	24 Months	
		55. TRANSPONDER TEST I.A.W. TM 20.100-20	24 Months	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
		56. LH / RH ALTIMETER and BLIND ENCODER CALIBRATION 24 Months 57. PITOT/STATIC SYSTEM LEAK CHECK I.A.W. TM-W NO. 24 Months 58. ANNUAL AVIONIC EQUIPMENT CHECK I.A.W. TM-R NO. 12 Months 59. HB-2006-500R1 MODE “C” AND “S” TRANSPONDERS 24 Months 60. OXYGEN BOTTLE NO. 1 HYDROSTATIC TEST 120 Months 61. OXYGEN BOTTLE NO. 2 HYDROSTATIC TEST 120 Months 62. OXYGEN BOTTLE NO. 3 HYDROSTATIC TEST 120 Months 63. OXYGEN BOTTLE NO. 4 HYDROSTATIC TEST 120 Months 64. OXYGEN BOTTLES (4 EA) - DRY 36 Months 65. OXYGEN SYSTEM REGULATOR TEST 12 Months 66. LH EMERGENCY OXYGEN BOTTLE HYDROSTATIC TEST 60 Months 67. RH EMERGENCY OXYGEN BOTTLE HYDROSTATIC TEST 60 Months 68. BASE OF VERTICAL STABILIZER BRACKET 600 Hours 69. STABILIZER TRIM ACTUATOR 600 Hours 70. CONTACTOR RELAIS STABILIZER 600 Hours 71. EMMERGENCY CONTACTOR RELAIS STABILIZER 600 Hours 72. LH / RH WING MAIN SPAR - ULTRASONIC INSPECTION 300 Hours 73. LH / RH WING NOSE BOLT - ULTRASONIC INSPECTION 300 Hours 74. LH / RH WING BOLTS AND BUSHINGS - MAGNAFLUXING 300 Hours 75. LH / RH FATIGUE WING SKIN ZONE INSPECTION 100 Hours 76. LH / RH WING SKIN SPLICE EDDY CURRENT INSPECTION 600 hours/120 Months 77. ENGINE HOT SECTION INSPECTION 300 Hours Tolerance + 100 78. HIGH ENERGY IGNITION UNIT 600 Hours 79. ENGINE CONTROL CABLE INSPECTION (TELEFLEX) 300 Hours 80. ENGINE OIL PRESSURE FILTER INSPECTION 50 Hours 81. STARTER MOTOR INSPECTION ICA DEA001 IF INSTALLED BY AIRCRAFT 24 Months	

<table>
<tr><th>Issue #</th><th>Issue(s)</th><th>Recommended Review, Action(s), and Coordination with Applicant</th><th>Notes, Action(s) Taken, and Disposition</th></tr>
<tr><td>109.</td><td>Airframe Fatigue Life/State Tracking</td><td>Example - Fatigue State: Strikemaster Mk82A servicing schedule Part 1, book 1, page 9 -11 defines fatigue life limits. A type M1967 fatigue meter Serial No 3569 is installed behind the right hand seat. This is a replacement meter, because this fatigue meter was not installed for the entire life of the aircraft. The readings below represent a datum only at this time, to match the component lives below and are not representative of the entire life of the aircraft.
<table>
<tr><th>G Value</th><th>Code</th><th>No. Counts</th><th>Factor</th><th>Resultant</th></tr>
<tr><td>-1.5</td><td>A</td><td>0047</td><td>1</td><td>47.0</td></tr>
<tr><td>-0.5</td><td>B</td><td>0343</td><td>2.4</td><td>823.2</td></tr>
<tr><td>+0.25</td><td>C</td><td>2207</td><td>0.8</td><td>1765.6</td></tr>
<tr><td>+1.75</td><td>D</td><td>9437</td><td>0</td><td>0</td></tr>
<tr><td>+2.5</td><td>E</td><td>5602</td><td>1.7</td><td>9523.4</td></tr>
<tr><td>+3.5</td><td>F</td><td>2775</td><td>8.2</td><td>22755.0</td></tr>
<tr><td>+5.0</td><td>G</td><td>0196</td><td>45.1</td><td>8839.6</td></tr>
<tr><td>+7.0</td><td>H</td><td>0000</td><td>72.8</td><td>0</td></tr>
<tr><td>Total:</td><td></td><td></td><td></td><td>43753.8</td></tr>
</table>
Meter reading FI = 0.0001 x 43753.8 = 4.37538 as calculated at 2083.30 airframe hours.
The principle components have fatigue indices and lives remaining as follows at this datum.
<table>
<tr><th>Component</th><th>Attained Life</th><th>Limit Life</th><th>Remaining</th></tr>
<tr><td>Port Wing-EEP/VH350</td><td>41.58659 FI</td><td>70 F1</td><td>28.41341</td></tr>
<tr><td>Starboard Wing - EEP/VH350</td><td>41.58659 FI</td><td>70 F1</td><td>28.41341</td></tr>
<tr><td>Fuselage 0-425</td><td>FI 41.58659</td><td>70 F1</td><td>28.41341</td></tr>
<tr><td>Lower and Upper attachments</td><td>0 FI</td><td>70 F1</td><td>70 F1</td></tr>
<tr><td>Fin - EEP/VH007</td><td>2083.30 hours</td><td>21200 hours</td><td>19116.30 hours</td></tr>
<tr><td>Tailplane EEP/JP4236</td><td>2083.30 hours</td><td>30600 hours</td><td>28516.30 hours</td></tr>
<tr><td>Pressure Cabin</td><td>2083.30 hours</td><td>12500 hours</td><td>10416.30 hours</td></tr>
<tr><td>Rear Fuselage</td><td>2083.30 hours</td><td>15300 hours</td><td>13216.30 hours</td></tr>
</table>
When 65 FI is attained, BAe CSI 32 must be carried out. Once 70 FI is attained, modification numbers 2275, 7044 and 7045 must be embodied. This allows further extension up to 100 FI provided that, at 5 FI increments, inspections in accordance with CSI 32 are carried out and show satisfactory results.
Strikemaster Mk 82A servicing schedule (part one, book one) states the Fatigue Formula as:
F.I.= 0.0001 x (1.0A+2.4B+0.8C+0.0D+1.7E+8.2F+45.1G+72.8H)
The fatigue life shall be constantly monitored on the Form 725 and this is to include numbers of spins performed.</td><td></td></tr>
<tr><td>110.</td><td>Safety Supplements</td><td>Verify the applicant/operator has copies of the applicable safety supplements for the aircraft and they are incorporated into the AIP or operational guidance as appropriate.</td><td></td></tr>
<tr><td>111.</td><td>Corrosion Due to Age and Inadequate Storage</td><td>Ask whether a corrosion control program is in place. If not, ask for steps taken or how it is addressed in the AIP. Evaluate adequacy of corrosion control procedures. Age, condition, and types of materials used in many former military aircraft require some form of corrosion inspection control. Recommend using TO 1-1-691, Corrosion Prevention and Control Manual.</td><td></td></tr>
<tr><td>112.</td><td>Pylons (Structural)</td><td>If applicable and installed, verify the AIP addresses the inspection of the aircraft's centerline pylons per the applicable guidance (that is, USAF, NAVAIR, NATO, or RAF) from a structural standpoint, including checking them for cracks.</td><td></td></tr>
</table>

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
113.	Engine Maintenance Procedures	Verify the AIP adheres to the maintenance procedures requirements per the applicable engine guidance. Verify the AIP adheres to the (could be RAF/SAF/NATO/Rolls-Royce-Bristol Siddeley Viper, and pick the one that matches the airplane) maintenance procedures requirements for the specific engine type installed.	
114.	Manufacturer's and/or USAF Engine Modifications	Verify the AIP addresses the incorporation of the manufacturer and military modifications to the engine installed. The NTSB and some foreign CAAs have determined a causal factor in some accidents is the failure of some civil operators of former military aircraft to incorporate the manufacturer's recommended modifications to prevent engine failures.	
115.	Cycles and Adjustment Engine Replacement Intervals	Ask if both engine cycles and hours are tracked. If not, recommend it be done. Example: This may be similar to the Rolls Royce Avon on the Hunter which is, viz. 4.0 cycles equivalent to 1 flight hour. This document also shows a calendar life of 10 years between overhauls and this is associated with corrosion of 12% chrome steels.	
116.	Airworthiness Directives for Rolls-Royce -Bristol Siddeley Viper	Recommend the applicable Airworthiness Directives involving certificated versions of the engine be reviewed and considered as part of the AIP. These will be known safety issues that have to be addressed.	
117.	Failures and Failure Modes	Verify the AIP discusses the known engine failure and failure modes.	
118.	Engine Components Life Limits	Verify the AIP addresses the life limit of engine components. "On condition" inspections are not acceptable.	
119.	Engine Inspections and Time Between Overhaul (TBO)	Verify the applicant has established the proper inspection intervals and TBO/replacement interval for the specific engine type and adhere to those limitations and replacement intervals for related components. Justification and FAA concurrence is required for an inspection and TBO above those set in the appropriate aircraft/engine inspection guidance. Clear data on TBO/time remaining on the engine at time of certification is critical, as is documenting those throughout the aircraft life cycle.	
120.	Rolls-Royce Engine Overhaul Difficulties	Operators have noted that there are difficulties in locating adequate overhaul facilities for Rolls-Royce engines, which would include the Rolls-Royce Viper engine in the Strikemaster.. This means that a thorough review of the AIP's provisions for the overhauled need to be scrutinized. A recent Jet Provost operator noted: "For some time I have been very concerned that the classic jet aircraft "hobby" will soon become defunct as a result of the inability to repair and overhaul turbine engines for several airframes. This is especially true for all power plants from Rolls Royce. There seems to be complete apathy and a "head in the sand" attitude amongst all owners that I've spoken with concerning this issue. It would be in the interests of all of us for the CJAA to actively pursue a goal of establishing programs for continued safe operation of the power plants in our vintage aircraft!! This will require direct negotiation with engine manufacturers for the establishment of repair and overhaul services contingent upon limiting manufacturers' liability (which I believe is the primary reason for their reluctance to provide ongoing support. It is my opinion that unless this issue is dealt with as a high priority - the hobby has no long term future. Tony S." (Jet Provost N4OOLT) http://www.classicjets.org/forum/viewtopic.php?f=12&t=1782.	
121.	Engine Check	Verify the AIP includes adequate procedures (that is, USAF, NAVAIR, NATO, or RAF), including checks and signoffs for returning an aircraft to airworthiness condition after any work on the engine. The NTSB found as part of its investigation of a fatal former military aircraft accident in 2004, that after an engine swap-out the week before the fatal accident, the mechanics had warned the newly installed engine was not operating correctly. The record also shows the A&P mechanic who oversaw and supervised the engine change did not sign off any maintenance records to return the airplane to an airworthy status. Before the fatal flight, two engine acceleration tests failed, and multiple aborted takeoffs took place in the days leading up to the crash.	
122.	Engine Thrust	Verify the AIP includes measuring actual thrust of the engine and tracking engine operating temperatures.	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
123.	Use of Different Fuels	Verify the AIP addresses how using different fuels may require changes or additions to the engine inspection and maintenance programs.	
124.	Engine Ground Run	Verify the engine goes through a ground run and check for leaks after reassembly. Confirm it achieves the required revolutions per minute for a given exhaust gas temperature, outside air temperature, and field elevation.	
125.	Fire Detection and Suppression System	If equipped, verify the serviceability of the fire detection and suppression system. The operator should establish an inspection process (reference the appropriate technical guidance) to ensure the validity of the fire warning system.	
126.	Servicing, Engine Fire Servicing Personnel Unfamiliar with the Aircraft Create Hazardous Situations	Ensure the operator warns servicing personnel via training and markings of the fire hazard of overfilling oil, hydraulic, and fuel tanks. Lack of experience with the aircraft servicing is a safety concern. Require supervision of servicing operations and fire safety procedures.	
127.	Fire Guard	Verify maintenance, servicing, preflight, and postflight activities include fire guard precautions. This is a standard USAF/NAVAIR safety-related procedure.	
128.	Engine Start	Verify the AIP includes procedures for documenting all unsuccessful starts.	
129.	Engine Storage	Review engine storage methods and determine engine condition after storage. Evaluate calendar time since the last overhaul. For example, using an engine with 50 hours since a 1991 overhaul may not be adequate and a new overhaul may be required after a specified time in storage. Note: The Experience has shown that on experimental exhibition of former military aircraft engines that have exceeded storage life limits are susceptible to internal corrosion, deterioration of seals and coatings, and breakdown of engine preservation lubricants.	
130.	Wiring Diagram and Inspection	Verify the AIP includes up-to-date wiring diagrams consistent with the appropriate guidance (that is, USAF, NAVAIR, NATO, or RAF) and includes the appropriate inspection procedures. Any reference to the applicable guidance must address modifications. In addition to the appropriate guidance, another reference is NA 01-1AA-505, Joint Service General Wiring Maintenance Manual.	
131.	Engine Foreign Object Damage (FOD)	Verify adoption of an FOD prevention program (internal engine section, external, and air intake). Use and properly inspect the air intake screen (FOD guards) provided with the aircraft and designed for the aircraft.	
132.	Engine Condition Monitoring (Oil Analysis)	Recommend an engine Spectrographic Oil Analysis Program (SOAP) be implemented with intervals of less than 15 hours as part of the engine maintenance schedule. If baseline data exists, this can be very useful for failure prevention. If manufacturer baseline data does not exist, this may still warn of impending failure. For the latest guidance on SOAPs affecting the particular engine, refer to Joint Oil Analysis Program Manual, Volume III: Laboratory Analytical Methodology and Equipment Criteria. (Aeronautical), (Navy) NAVAIR 17-15-50.3, (Army) TM 38-301-3, (Air Force) TO 33-1-37-3, and (Coast Guard) CGTO 33-1-37-3, dated July 31, 2012. This document presents the methodology for evaluating spectrometric analyses of samples from aeronautical equipment. The methodology enables an evaluator to identify where metals present in the sample and their probable sources, judge equipment condition, and make recommendations that influence maintenance and operational decisions. Following these recommendations can enhance safety and equipment reliability and contribute to more effective and economic maintenance practices.	
133.	Engine Bleed Air	Verify the AIP includes procedures for inspecting and ensuring the serviceability of the engine bleed air system.	
134.	Fuel Tank Inspections and Related Structures	Verify the AIP includes procedures for inspecting the fuel tanks (and related structures). Deterioration of bladder tank (bag) and the sealant can pose a safety problem, especially because of the aircraft's age and storage, as well as the difficulty of the inspection (and access to the fuel tanks) itself. Bladder-type fuel tank safety is not necessarily ensured by only "on-condition" inspections and may require more extensive processes, including replacements. In any event, adequate data must be provided for any justification to inspect rather than replacing the fuel tanks at the end of their life limit.	

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135.	Broken Systems (Fuel, Oil, and Hydraulic) Lines	Verify the AIP includes procedures for inspecting and replacing fuel, oil, and hydraulic lines according to the applicable USAF requirements; for example, MIL-DTL-8794 and MIL-DTL-8795 specifications.	
136.	Systems Functionality and Leak Checks	Verify procedures are in place to check all major systems in the aircraft for serviceability and functionality. Verify the leak checks of all systems are properly accounted for in the AIP per the military (that is, USAF, NAVAIR, NATO) requirements.	
137.	Oil, Fuel, and Hydraulic Fluids	Verify procedures are in place to identify and use a list of equivalents of materials for replacing oil, fuel, and hydraulic fluids. Many operators include a cross-reference chart for NATO and U.S. lubricants as part of the AIP.	
138.	Electrical System and Batteries	Verify functionality of the generator and the compatibility of the aircraft's electrical system with any new battery installation or other system and component installation or modification. Avoiding overload conditions is essential because this is a known problem with the aircraft's electrical system.	
139.	Borescope Engine	Recommend the AIP incorporate borescope inspections of the engine at 50 hours per the applicable inspection procedures. AC 43.13-1 can be used as a reference.	
140.	Pitot/Static, Lighting, and Avionics and Instruments	Verify compliance with all applicable 14 CFR requirements (that is, § 91.411) concerning the pitot/static system, exterior lighting (that is, adequate position and anti-collision lighting), transponder, avionics, and related instruments.	
141.	Pitot Tube	Verify the AIP addresses the proper inspection of the pitot tube system.	
142.	Oxygen System	Emphasize inspection of the oxygen system and any modifications. Compliance with § 91.211, Supplemental Oxygen, is required. Recommend adherence to § 23.1441, Oxygen Equipment and Supply. Moreover, per FAA Order 8900.1, change 124, chapter 57, Maintenance Requirements for High-Pressure Cylinders Installed in U.S. Registered Aircraft Certificated in Any Category, each high-pressure cylinder installed in a U.S.-registered aircraft must be a cylinder manufactured and approved under the requirements of 49 CFR, or under a special permit issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA) under 49 CFR part 107. There is no provision for the FAA to authorize "on condition" for testing, maintenance, or inspection of high-pressure cylinders under 49 CFR (PHMSA).	
143.	Other Pressure Cylinders	Emphasize the proper inspection of any pressure cylinders. Per FAA Order 8900.1 change 124, chapter 57, each high-pressure cylinder installed in a U.S.-registered aircraft must be a cylinder that is manufactured and approved under the requirements of 49 CFR, or under a special permit issued by PHMSA under 49 CFR part 107. There is no provision for the FAA to authorize "on condition" for testing, maintenance or inspection of high-pressure cylinders under 49 CFR. For example, the fire bottles are time sensitive items, and may have a limit of 5 years for hydrostatic testing. The issue is when the bottles are removed from the aircraft. It is industry knowledge that non-U.S. bottles may be installed as long as they are within their hydrostatic test dates. A problem arises when removing the bottles for hydrostatic testing. Maintenance programs require these bottles to be hydrostatic tested. Once the non-U.S. bottles are removed from the aircraft, they are not supposed to be hydrostatic tested, recharged, or reinstalled in any aircraft. Moreover, those bottles cannot be serviced (on board) after the testing date has expired.	
144.	Anti-G Suit System	Verify the serviceability of both aircraft systems (that is, anti-G valve) and the anti-G suit, if installed. There have been instances of anti-G valves being stuck in the open position. If the anti-G valve fails, it can blow scorching hot air into the cockpit. Note: A G suit, or the more accurately named anti-G suit, is a flight suit worn by aviators and astronauts who are subject to high levels of acceleration force (G). It is designed to prevent a blackout and G-induced loss of consciousness (G-LOC caused by the blood pooling in the lower part of the body when under acceleration, thus depriving the brain of blood. Blackout and G-LOC have caused a number of fatal aircraft accidents.	
145.	Pressurization Vessel and Environmental Control	Verify the AIP incorporates the inspection of the pressurized sections of the aircraft as per the appropriate technical guidance (that is, USAF, NAVAIR, NATO, or RAF). Note pressure cycles and any repairs in the area. Verify the AIP incorporates related documentation and manuals.	

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146.	Cockpit Instrumentation Markings	Verify all cockpit markings are legible and use proper English terminology and units acceptable to the FAA. The AIP should address inspection of all cockpit instruments with regular intervals for each subsystem. Care should also be taken to inspect modifications, including communications, navigation, or other upgrades to the cockpit. The AIP should address a cockpit indicator calibration process to ensure accurate indications for essential components.	
147.	Caution Light System	Ensure the AIP includes steps to verify and maintain the integrity of the caution light systems in the aircraft.	
148.	Safety Markings and Stenciling	Verify appropriate safety markings required by the technical manuals (that is, stenciling and "Remove Before Flight" banners) have been applied and are in English. These markings provide appropriate warnings/instruction regarding areas of the aircraft that could be dangerous. These areas include intakes, exhaust, air brakes, and ejection seats. In the case of ejections seat systems, and as noted in FAA Order 8130.2, paragraph 4074(e), "a special airworthiness certificate will not be issued before meeting this requirement."	
149.	Cockpit FOD	Verify the AIP addresses thorough inspection and cleaning of the cockpit area to preclude inadvertent ejection, flight control interference, pressurization problems, and other problems. This is a standard USAF/NAVAIR practice.	
150.	Tires and Wheels	Verify use of proper tires and/or equivalent substitutes (including inner tubes) and adherence to any tire limitation, such as allowed number of landings, inflation requirements, and using retreaded tires. The type of tire may dictate the number of landings. Wheels must be properly and regularly inspected and balanced. Many former military high-performance aircraft have a long history of tire failures, one of the leading causes of accidents.	
151.	Explosives and Propellants	Check compliance with applicable Federal, State, and local requirements for all explosives and propellants in terms of use, storage, and disposal, in addition to verifying service (USAF) requirements are followed.	
152.	HAZMAT	Recommend the AIP incorporates adequate provisions on HAZMAT handling. Refer to Gamauf, *Handling Hangar Hazmat*, August 2012.	
153.	In-Flight Canopy Separation	Ensure the AIP addresses the proper maintenance and operating condition of all canopy locks.	
154.	Canopy Seals	Test canopy seals for leaks (that is, use ground test connection).	
155.	Transparencies Problems	Ensure proper transparencies maintenance for safe operations. Monitor/inspect canopy for crazing every 10 hours of flight.	
156.	Emergency Canopy Jettison Mechanism	Verify the AIP includes testing the emergency canopy jettison mechanism, if so equipped. It must be functional and properly inspected per the applicable technical guidance.	
157.	Brake System	Emphasize a detailed inspection of the brake assemblies, adhere to applicable inspection guidelines and replacement times (that is, USAF, NAVAIR, NATO, or RAF), and consider more conservative inspections. Recommend brake inspection at 20 to 30 landings.	
158.	Hoses and Cables	Inspect and replace hoses and cables appropriately. Due to the age of many of the former military high-performance aircraft, and in many cases, poor storage history, it is essential to ensure thorough inspections of all hoses and cables (multiple systems) and replace them in accordance with the guidance and requirements (that is, USAF, NAVAIR, NATO, or RAF).	
159.	Grounding	Verify adequate procedures are in place for grounding the aircraft. Static electricity could cause a fire or explosion, set off pyrotechnic cartridges, or result in any combination of the above. In grounding the aircraft, it is essential that all electrical tools are grounded, and industry-approved explosion-proof flashlights or other lighting sources be used.	

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160.	TO 00-25-172	Use TO 00-25-172, Ground Servicing of Aircraft and Static Grounding/Bonding, dated August 2012, as the baseline for all servicing functions. This manual describes physical and/or chemical processes that may cause injury or death to personnel, or damage to equipment, if not properly followed. This safety summary includes general safety precautions and instructions that must be understood and applied during operation and maintenance to ensure personnel safety and protection of equipment.	
161.	Angle of Attack (AOA) System	Ensure the AIP covers the adequate inspection and calibration of the AOA system and AOA indexer if one is originally installed in the aircraft.	
162.	Antennas	Verify any original antennas are compatible with all installed electronics. In addition, verify the AIP includes the appropriate inspections of the antennas. Some new avionics may impose airspeed limitations. Over the years, many different antennas were installed in this type of aircraft. For the basics on this issue, refer to Higdon, David. Aircraft as Antenna Farm. *Avionics,* Vol. 49, No. 9 (September 2012).	
163.	Hard Landings and Over G Situations	Verify hard landing and over-G inspection programs are adopted. This is especially important when acrobatics are performed or when the aircraft is involved in military support missions outside the scope of its experimental certificate (that is, PAO), and in light of safety concerns with the wing and flight control surface cracks and delamination.	
164.	Nondestructive Inspection (NDI)	Ensure the AIP provides for all the required NDI or nondestructive testing under the appropriate guidance (that is, USAF, NAVAIR, NATO, or RAF).	
165.	Parts Fabrication	Verify engineering (that is, designated engineering representative) data supports any part fabrication by maintenance personnel. Unfortunately, many modifications are made without adequate technical and validation data. AC 43.18, Fabrication of Aircraft Parts by Maintenance Personnel, may be used as guidance.	
166.	Wings and Tail Bolts and Bushings	Ask about inspections and magnafluxing of wings, and tail bolts and bushings. Recommend the AIP incorporate other commonly used and industry-accepted practices involving NDI if not addressed in the manufacturer's maintenance and inspection procedures.	
167.	Horizontal Stab Bearing Inspection and Lubrication	Ask if the AIP includes required inspections and maintenance of the horizontal stab bearings. Failure to properly lubricate/inspect the bearings or improper reinstallation could result in loss/failure of the bearings and in-flight loss of control.	
168.	Landing Gear Retraction Test and Related Maintenance	Verify the AIP provides for the regular landing gear retraction test and related maintenance tasks, including documentation, per the applicable procedures and required equipment (that is, USAF, NAVAIR, NATO, or RAF).	
169.	Honeycomb Structures	Verify the AIP provides for the inspection and replacement of all bonded honeycomb structures per the applicable guidance (that is, USAF, NAVAIR, NATO, or RAF).	
170.	Flight Control Balancing, Deflection, and Rigging	Verify flight controls were balanced per the applicable maintenance manual(s) (that is, USAF, NAVAIR, NATO, or RAF) after material replacement, repairs, and painting. Verify proper rigging and deflection. In several former military aircraft, damage to flight controls has been noticed when inadequate repairs have been performed. If there are no adequate records of the balancing of the flight controls, the airworthiness certificate should not be issued.	
171.	Speed Brakes	Verify proper condition, deflection, and warning signage of the speed brake as per the applicable guidance (that is, USAF, NAVAIR, NATO, or RAF).	
172.	Yaw Damper	Verify any the yaw damper is addressed in the AIP as per the applicable guidance (that is, USAF, NAVAIR, NATO, or RAF).	
173.	Accurate Weight & Balance (W&B)	Review original W&B paperwork. Verify adherence to the applicable guidance (that is, USAF, NAVAIR, NATO, or RAF) as well as FAA-H-8083-1, Aircraft Weight and Balance Handbook, if documentation by the applicant appears to be inadequate. Several former military aircraft accidents have been linked to center of gravity miscalculations.	

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174.	"Experimental" Markings	Verify the word "EXPERIMENTAL" is located immediately next to the canopy railing, on both sides, as required by § 45.23(b). Subdued markings are not acceptable.	
175.	N-Number	Verify the marking required by §§ 45.25 and 45.29(b) concerning the registration number (N-number), its location, and its size are complied with. If non-standard markings are proposed, verify compliance with Exemption 5019, as amended, under regulatory Docket No. 25731.	
176.	Type of Ejection Seat System	Identify the type of ejection seat fitted to the aircraft. The type of seat changes many aspects of operations and maintenance.	
177.	OEM Ejection Seat Support	Ask the applicant whether the ejection seat OEM still supports the ejection seat system, and whether it control part supplies. It is critical to clearly understand if and how the OEM supports both the earlier or upgraded ejections seat.	
178.	Ejection Seat System Maintenance	Ensure maintenance and inspection of the ejection seat and other survival equipment is performed in accordance with the applicable guidance (that is, USAF, NAVAIR, NATO, or RAF) by trained personnel. Include specific inspections and recordkeeping for pyrotechnic devices. Ejection seat system replacement times must be adhered to. No "on condition" maintenance may be permitted for rocket motors and propellants. Make the distinction between replacement times, that is, "shelf life" vs. "installed life limit." For example, a 9-year replacement requirement is not analogous to a 2-year installed limit. If such maintenance documentations and requirements are not available, the seat must be deactivated.	
179.	Ejection Seat Components Life Limit	Ensure life-limit requirements concerning the ejection seat are followed. No deviations or extensions should be permitted. If the seat is not properly maintained, including current pyrotechnics, it must be disabled.	
180.	Aircraft Explosive Record RAF Form 6581 and Form 701ES	Ask applicant/operator to provide RAF Form 6581 Aircraft Explosive Record for all explosives incorporated in the aircraft. RAF Form 701Es Ejection Seat and Components Log Card should also be requested. In addition, both forms should be used and incorporated as part of the aircraft's records.	
181.	Crew Harnesses	Verify the harness used by the crew is the required type for the ejection seat used. Accidents have been fatal because of harness issues.	
182.	Ejection Seat System Maintainers Training	Require adequate ejection seat training for maintenance crews. On May 9, 2012, an improperly trained mechanic accidentally jettisoned the canopy of a former military aircraft while performing maintenance and was seriously injured.	
183.	Martin-Baker MRO Support	Recommend manufacturer support be used in the maintenance of the ejection seats. Unlike many other older types of ejection seats, Martin-Baker, the manufacturer, still supports its older seats. Through its Maintenance, Repair and Overhaul (MRO), Martin-Baker can carry out maintenance if a customer requested this service. The company now offers a dedicated MRO service, including a facility by one of its subsidiary, Martin-Baker America, in Johnstown, PA.	
184.	Ejection Seat Modifications	Prohibit ejection seat modifications unless directly made by the manufacturer or permitted under the applicable and current technical guidance (that is, USAF, NAVAIR, or RAF). The use of the modified seat must be allowed by the airframe manufacturer or applicable service guidance.	
185.	Ground Support Equipment Maintenance	Verify the AIP provides for the proper maintenance of all required approved ground support equipment for the aircraft. Related technical guidance must be available as well.	
186.	Aircraft Re-Assembly Issues	Ensure all work accomplished for the re-assembly of the aircraft is properly tagged or classified as such if it differs from required inspections per the applicable guidance. This is particularly important because some operators may classify, on their records, work on components as "on condition" or "zero-timed" and use that classification to later defer required inspections. That is not acceptable. In many cases operators have re-assembled aircraft, "cleaning," "checking," and "servicing" components as part of that process. It cannot be assumed that such work is equivalent to an overhaul. Refer to "On Condition" Inspections, above.	

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187.	Modification State	Current modifications state the U.K. data could look similarly to this: Currently this aircraft type is still in service and is being supported by British Aerospace and Rolls-Royce. They have supported this aircraft for its entire life and have released this specific aircraft in the modification state currently approved for service flying. The applicant has checked that all modifications classed B/2 or above are embodied against the Master list reference "BAC167 Strikemaster Master Numerical Modification List" Second Edition dated July 1997 and confirmed that a satisfactory standard has been attained. The latest modification embodied was number 7064. Similarly, an acceptable state with respect to CSIs and CSTIs has been achieved in service. The applicant has introduced Global modification GA S01 to disable the armament system by removal of the master armament switch.	
188.	Weight and Balance	Current Weight and Balance state the U.K. data could look similarly to this: Service limitations for Maximum takeoff weight and Maximum landing weight are 11,500 lb and 9500 lb respectively. The center of gravity limits are between 13.0" aft of datum and 18.5" aft of datum (without underwing stores), or 18.0" (with 2 or 4 under wing stores). The CG datum is defined as the flat headed spigot marked "Datum Point" on the underside of the fuselage. Basic aircraft weight and centre of gravity position have been established from Global Report. This shows the maximum takeoff weight will be within the service limitations and calculations show that cg will remain within the above limitations at all fuel states.	

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Operating Limitations and Operational Issues			
189.	AIP and Related Documentation	Require adherence to the AIP and related documentation as part of the operating limitations.	
190.	Understanding of the Operating Limitations	Require the applicant to sign the Acknowledgment of Special Operating Limitations form.	
191.	Pilot in Command (PIC) Requirements	Ensure the operating limitations address PIC requirements. Direct transition from a modern corporate jet to a high-performance former military aircraft with minimum training is not a safe practice. Refer to the appropriate plot training and checking requirements in FAA Order 8900.1, volume 5, chapter 9, section 2.	
192.	Recent Flight Experience	Recommend proficiency and currency of 3 hours per month and five to six takeoffs and landings. The typical general experience of “at least three takeoffs and three landings within the preceding 90 days” is not sufficient for the safe operation of the aircraft.	
193.	PIC Currency in Number of Aircraft	Recommend the operator limit the number of tactical jets the PIC stays current on. The USAF and USN restrict the number of aircraft types a pilot could hold currency on to two or three. This should be considered by operators who have several aircraft types in their inventory.	
194.	Flight Manuals	Ensure the PIC operates the aircraft as specified in the most current version of the flight manual (that is, USAF -1, RAF Pilot Notes) for the version of the aircraft being flown.	
195.	Checkout Procedures	Recommend the establishment of a pilot checkout certification process similar to the military operator, as part of the Experimental Authorization. This training should include a structured ground school process and documentation covering the operation of the aircraft with an emphasis on emergency procedures.	
196.	Annual Checkout	Recommend the PIC conduct an annual checkout on the aircraft.	
197.	Adequate Annual Program Letter	Verify the applicant’s annual program letter contains sufficient detail and is consistent with applicable regulations and policies. (Many applicants/operators submit inadequate and vague program letters or fail to submit them on an annual basis.) Also verify the proposed activities (for example, an air show at a particular airport) are consistent with the applicable operating limitations (for example, avoiding populated areas) and do not pose a safety hazard, such as the runway being too short. There may be a need to review the proposed airports to be used.	

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198.	Additional Program Letter Guidance	Ensure program letters accompanying an application for an experimental airworthiness certificate meet the requirements of § 21.193. The letter must be detailed enough to permit the FAA to prescribe the conditions and limitations necessary to ensure safe operation of the aircraft. The letter must include— 1. The purpose for which the aircraft is to be used (such as R&D, crew training, or exhibition). 2. The purpose of the experiment. The letter must describe the purpose of the experiment and the aircraft configuration or modifications, and outline the program objectives. 3. The estimated number of flights or total flight hours required for the experiment and over what period of time (for example, days or months). 4. The areas over which the experiment will be conducted. A written description or annotated map is acceptable. Specifically describe the area. Describing the operating area as "the 48 states," is not acceptable. The FAA may establish boundaries of the flight test area, including takeoff, departure, and landing approach routing to minimize hazards to persons, property and other air traffic. However, it is the responsibility of the operator to ensure safe flight of the aircraft. 5. Unless converted from a type certificated aircraft, three-view drawings or three-view dimensioned photographs of the aircraft. 6. Any pertinent information found necessary by the FAA to safeguard the general public. The letter must also include any exemptions that may apply to the aircraft, such as non-standard markings or using an experimental aircraft for hire. 7. If using the aircraft for multiple purposes or roles, (1) documentation of all operations for each purpose, (2) a description of any configuration changes that will occur between each purpose to include adding or removing external stores and enabling or disabling systems, and (3) a separate section for each purpose. For example, an aircraft could have an experimental airworthiness certificate for the purposes of R&D and exhibition. The same aircraft may also conduct military, State, or PAO. In this example, the program letter must describe all three roles with the same level of detail. While the airworthiness certificate is not in effect nor can the FAA prescribe limitations for PAO, the FAA cannot determine the appropriate certification for the aircraft without knowledge of how the aircraft is used. **SAMPLE— Research and Development / Exhibition - Applicant Program Letter for a Special Airworthiness Certificate** • Registered Owner (as shown on Certificate of Aircraft registration): N*AME: Brand X Support Services, Inc., ADDRESS: 123 Airport Street, Any Town, USA 00010.* • Aircraft Description: Registration Marks: i.e., *N12345,* Aircraft Yr. Mfg.: *1965,* Aircraft Serial No. 452*,* and Aircraft Model Designation. <u>R&D</u> • Describe program purpose for which the aircraft is to be used (14 CFR 21.193(d)(1)), i.e., *R&D providing chase for Major Airplane Manufacturer for certification testing of their next business jet. Aircraft Certification Office X is the project office. The assigned project number is ACOXzzz;* • Provide the following information as it pertains to your Program Letter (a) List estimated flight hours required for program, i.e. 75 hours*,* (b) List estimated number of flights required for program, number of flights, i.e. *50,* (d) List estimated duration for programs (14 CFR § 21.193(d)(2)), i.e. *150 days;* • Describe the areas over which the flights are to be conducted, and address of base operation (14 CFR 21.193(d)(3)), i.e., *the flights will take place within 150 nm of airport KAAA, excluding the airspace over City-X. The maximum altitude is FL240. The base of operations is Major Airplane Manufacturer Hangar, 12345 Tower Drive, City, etc.;* • Describe the aircraft configuration (attach three-view drawings or three-view dimensioned photographs of the aircraft (14 CFR 21.193(d)(4) and include a description of how the configuration is different from the other purposes listed). *See attached.* <u>Exhibition</u> • Describe program purpose for which the aircraft is to be used (14 CFR 21.193(d)(1)) such as e*xhibition at the following events over the next 8 months, i.e., AirVenture, August 1, 2013;* • Provide the following information as it pertains to your program letter (what you are planning to do for the next year or duration of certificate, whichever less): (a) estimated flight hours for the program broken down into operations (i.e. exhibition, training, flight to and from events); (b) estimated number of flights; • Describe the areas over which the flights are to be conducted, and address of base operation (14 CFR 21.193(d)(3)), i.e. c*rew training flights will take place within 125 nautical miles of Any Town, USA airport with a maximum altitude of 10,000 feet. The base of operations is the address listed above;* • Describe the aircraft configuration (attach three-view drawings or three-view dimensioned photographs of the aircraft (14 CFR 21.193(d)(4)	

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199.	Flight Manual Warnings, Cautions, and Notes	Consider requiring review (before flight) of all flight manual warnings, cautions, and notes. Such a review will greatly enhance safety, especially in those cases where the PIC does not maintain a high level of proficiency in the aircraft. The following definitions apply to warnings, cautions, and notes found throughout this instruction. Warning: Explanatory information about an operating procedure practice, or condition, that may result in injury or death if not carefully observed or followed. Caution: Explanatory information about an operating procedure, practice, or condition, that may result in damage to equipment if not carefully observed or followed. Note: Explanatory information about an operating procedure, practice, or condition, that must be emphasized.	
200.	Operating Limitations	Ensure the PIC operates the aircraft as specified in section discussing Operating Limitations, in addition to the FAA-approved operating limitations.	
201.	Safety Supplements	Verify the applicant/operator has incorporated the applicable safety supplements into operational guidance as appropriate. The most current version of the AFM/NATOPS/Pilot Notes usually provides a listing of affected safety supplements and this can be used as a reference.	
202.	Foreign Aircraft Particularities and Restrictions	Verify whether the aircraft includes aircraft-specific restrictions if it is of foreign origin. If those restrictions exist, the operator must understand those restrictions before flight, especially any post-restoration flight.	
203.	Maintenance and Line Support	Verify the aircraft is operated with qualified crew chief/plane captains, especially during preflight and postflight inspections as well as assisting the PIC during startup and shutdown procedures.	
204.	Ejection Seat System PIC Training	Require adequate ejection seat training for the PIC and crew, if applicable, for the type of seat installed. The PIC must also be able to ensure any additional occupant is fully trained on ejection procedures and alternate methods of escape. Evidence shows the safety record of attempted ejections in civilian former military aircraft is very poor, typically indicating inadequate training leading to ejections outside of the envelope. The ejection envelope is a set of defined physical parameters within which an ejection may be successfully executed.	
205.	Ejection Seat System Ground Safety	Verify the safety of ejection seats on the ground. Verify ejection seats cannot be accidentally fired, including prohibiting untrained personnel from sitting on the seats. As NAVAIR states, “the public shall be denied access to the interior of all aircraft employing ejection seats or other installed pyrotechnic devices that could cause injury.” In addition, operators should provide security during the exhibition of the aircraft to prevent inadvertent activation of the ejection system from inside or outside the aircraft by spectators or onlookers. The PIC on a recent jet warbird operation noted: “Recently we had a case where a guest in the back jettisoned the rear canopy on the ground at the parking position while trying to lock the canopy with the lever on the R/H side… The canopy went straight up for 6 m (20 ft) and fell back on the ground, right in front of the left wing leading edge next to the rear cockpit (fortunately not straight back on the cockpit to punish the guy).” Note: Any ejection seat training must include survival and post-bailout procedures, based either on U.S. Navy or USAF training (or NATO), as appropriate for the equipment being used. Note: As a result of accidents, DOD policy prohibits the public from sitting on armed ejection seats.	
206.	Ejection Seat System Safety Pins	Require the PIC to carry the aircraft’s escape system safety pins on all flights and high-speed taxi tests. As a recommendation stemming from a fatal accident, the U.K. CAA may require “operators of civil registered aircraft fitted with live ejection seats to carry the aircraft’s escape systems safety pins (a) on all flights and high-speed taxi tests (b) in a position where they are likely to be found and identified without assistance from the aircraft’s flight or ground crews.”	
207.	Parachutes	Comply with § 91.307, Parachutes and Parachuting. This regulation includes requirements that the parachute must (1) be of an approved type and packed by a certificated and appropriately rated parachute rigger, and (2) if of a military type, be identified by an NAF, AAF, or AN drawing number, an AAF order number, or any other military designation or specification number. The parachute must also be rated for the particular ejection seat being used.	
208.	Engine Operating Limits	Adhere to all engine limitations in the applicable flight manuals.	

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209.	Spool Down Time	Verify the AIP incorporates action(s) following a change in the spool down time of the engine(s) after shutdown. This is critical as it could be an indicator of an upcoming problem with the engine.	
210.	External Stores	Prohibit the installation of external stores that were not approved by the military service (that is, USAF, NAVAIR, or RAF). Under FAA Order 8130.2, only aircraft certificated for the purpose of R&D may be eligible to operate with functional jettisonable external fuel tanks or stores, but the safety of people and property on the ground still has to be addressed. As the NTSB stated in 2012 following the fatal accident of a high-performance experimental aircraft, "the fine line between observing risk and being impacted by the consequences when something goes wrong was crossed." In many cases, the pilots may understand the risks they assumed, but the spectators' presumed safety has not been assessed and addressed.	
211.	Emergency Stores Release Handle (ESRH)	Disable the ESRH, if applicable.	
212.	Master Armament Switch	Disable and disconnect the master armament switch from any system. Weapon-related buttons (bomb/rocket button, trigger) on the control stick grip and panels must also be disabled and disconnected from all systems.	
213.	Restrict Acrobatics	Restrict acrobatics per the appropriate flight manual.	
214.	Mach Meter and Airspeed Calibration	Require the installation and calibration of a Mach meter or verify the PIC makes the proper Mach determination before flight. Unless the airspeed indicator is properly calibrated, transonic range operations may have to be restricted.	
215.	Accelerometer	Ensure the aircraft's accelerometer is functional if one is provided. This instrument is critical to remain within the required G limitation of the aircraft.	
216.	High-Speed Restrictions and Controllability	Recommend limiting transonic operations by 10 percent below MMO. This provides a good safety margin and could be addressed in the operating limitations, the AFM, and related SOPs. MMO is the maximum operating limit speed (V_{MO} / M_{MO} airspeed or Mach Number, whichever is critical at a particular altitude) is a speed that may not be deliberately exceeded in any regime of flight (climb, cruise, or descent).	
217.	Phase I Flight Testing	Recommend, at a minimum, all flight tests and flight test protocol(s) follow the intent and scope of acceptable USAF/U.S. Navy functionality test procedures. The aircraft needs detailed Phase I flight testing for a minimum of 10 hours. Returning a high-performance aircraft to flight status after restoration cannot be accomplished by a few hours of "flying around." Safe operations also require a demonstrated level of reliability.	
218.	Post-Maintenance Check Flights	Recommend post-maintenance flight checks be incorporated in the maintenance and operation of the aircraft and TO 1-1-300, Maintenance Operational Checks and Flight Checks, dated June 15, 2012, be used as a reference.	
219.	Flight Over Populated Areas	Prohibit flights over populated areas, including takeoffs and landings, if an ejection seat is functional. If not, the aircraft may be operated over populated areas for the purpose of takeoff and landing only, and only in Phase II operations. The area on the surface described by the term "only for the purpose of takeoff and landing" is the traffic pattern. For the purpose of this limitation, the term "only for the purpose of takeoff and landing" does not allow multiple traffic patterns for operations such as training or maintenance checks. As the NTSB stated in 2012 following the fatal accident of a high-performance experimental aircraft, "the fine line between observing risk and being impacted by the consequences when something goes wrong was crossed." In many cases, and although "the pilots understood the risks they assumed; the spectators assumed their safety had been assessed and addressed," and it was not. Note: Depending on the aircraft type or specific operational issues, additional limitations maybe considered with regards to flights over populated areas.	
220.	Controlled Bailout Area	If operational procedures require the establishment of a controlled bailout area, ensure it (1) does not endanger people or property on the ground in any way, (2) follows established USAF/NAVAIR procedures, and (3) addresses the possibility of erratic flight paths after ejections. Refer to *Flight Over Populated Areas* above.	

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221.	G Limitations	Ensure there are conservative G limits. Many of these aircraft have structural problems dictating this prudent approach. There is no justification to take the aircraft anywhere near its original limitations. The fact that the aircraft could be G loaded does not mean such performance should be attempted or is inherently safe. This is especially true given the aircraft's age and historical use. Maximum G limits should be established below design specifications based on the age and condition of the airframe. Particular attention to the condition of the wings is required because in-flight breakups with the original wings have occurred recently.	
222.	Visual Meteorological Condition (VMC) and Instrument Flight Rules (IFR) Operations	Recommend only day VMC operations. If IFR operations are permitted, prohibit operations in known icing conditions, as the aircraft is not properly equipped for icing conditions. Comply with § 91.205.	
223.	Carrying of Passengers, § 91.319(a)(2)	Prohibit the carrying of passengers (and property) for compensation or hire at all times. For hire flight training is permitted only in accordance with an FAA-issued letter of deviation authority (LODA).	
224.	Passenger Training and Limitations	Implement adequate training requirements and testing procedures if a person is carried on the back seat [refer to *Carrying of Passengers, § 91.319(a)(2)* above for limitations under § 91.319(a)(2)] to allow the performance of that crew's position responsibilities per the applicable Crew Duties section of the USAF Flight Manual. This training should not be a simple checkout, but rather a structured training program (for example, ground school on aircraft systems, emergency and abnormal procedures, "off-limits" equipment and switches, and actual cockpit training). The back seat qualification should also include (1) ground egress training (FAA-approved ejection seat training), (2) FAA approved ejection seat and survival equipment training, (3) abnormal/emergency procedures, and (4) normal procedures. In addition to any aircraft-specific (that is, systems and related documentation) training, it is recommended that the *Naval Aviation Survival Training Program* (Non-aircrew NASTP Training) or/and *the United States Air Force Aerospace Physiology Program* (AFI 1 I-403, Aerospace Physiological Training Program) be used in developing these programs. In addition, passenger physiological and high-altitude training should be implemented for all operations above 18,000 ft. This issue can be addressed as part of the operating limitations by requiring the right seat training and incorporating the adequate reference (name) of the operator's training program.	
225.	Spins	Prohibit spins.	
226.	Reduce Vertical Separation Minimums (RVSM)	Prohibit operations above RVSM altitudes (FL290).	
227.	High-Altitude Training	Recommend the PIC complete an FAA-approved physiological training course (for example, altitude chamber). Refer to FAA Civil Aerospace Medical Institute (CAMI) Physiology and Survival Training website for additional information.	
228.	Minimum Equipment for Flight	Ask the applicant to specify minimum equipment for flight per applicable USAF guidance, and develop such a list consistent with the applicable requirements (that is, USAF, NAVAIR, NATO, or RAF) and § 91.213. These documents list the minimum essential systems and subsystems that must work on an aircraft for a specified mission.	
229.	Post-Flight and Last-Chance Check Procedures	Recommend the establishments of post-flight and last-chance inspection per the applicable guidance (that is, USAF, RAF, or NATO). Note: Last-chance checks may include coordination with the airport and ATC for activity in the movement areas.	

<table>
<tr><th>Issue #</th><th>Issue(s)</th><th>Recommended Review, Action(s), and Coordination with Applicant</th><th>Notes, Action(s) Taken, and Disposition</th></tr>
<tr><td>230.</td><td>Minimum Runway Length</td><td>Recommend a minimum runway length be established. In addition, ensure the PIC verifies, using the appropriate aircraft performance charts (Performance Supplement), sufficient runway length is available considering field elevation and atmospheric conditions. To add a margin of safety, use the following:

<u>For Takeoff</u>

• No person may initiate an airplane takeoff unless it is possible to stop the airplane safely on the runway, as shown by the accelerate-stop distance data, and to clear all obstacles by at least 50 ft vertically (as shown by the takeoff path data) or 200 ft horizontally within the airport boundaries and 300 ft horizontally beyond the boundaries, without banking before reaching a height of 50 ft (as shown by the takeoff path data) and after that without banking more than 15 degrees.
• In applying this section, corrections must be made for any runway gradient. To allow for wind effect, takeoff data based on still air may be corrected by taking into account not more than 50 percent of any reported headwind component and not less than 150 percent of any reported tailwind component.

<u>For Landing</u>

• No person may initiate an airplane takeoff unless the airplane weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance in the AFM for the elevation of the destination airport and the wind conditions expected there at the time of landing), would allow a full stop landing at the intended destination airport within 60 percent of the effective length of each runway described below from a point 50 ft above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport, the following is assumed:
o The airplane is landed on the most favorable runway and in the most favorable direction, in still air.
o The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of that airplane, and considering other conditions such as landing aids and terrain.</td><td></td></tr>
<tr><td>231.</td><td>Runway Considerations</td><td>Consider accelerate/stop distances, balanced field length, and critical field length in determining acceptable runway use per CJAA guidance. To enhance operations, it is recommended takeoff procedures similar to the USAF minimum acceleration check speed (using a ground reference during the takeoff run to check for a pre-calculated speed) be adopted.</td><td></td></tr>
<tr><td>232.</td><td>Barrier
MA-1, MA-1A, and BAK-15</td><td>Recommend the use of a barrier (MA-1A) system be considered where available. If a barrier system is used, ensure procedures be developed for this. Refer to AC 150/5220-9, Aircraft Arresting Systems on Civil Airports, dated December 20, 2006. The military installs and maintains aircraft arresting systems when certain military operations are authorized at civil airports. Aircraft arresting systems serve primarily to save lives by preventing aircraft from overrunning runways in cases where the pilot is unable to stop the aircraft during landing or aborted takeoff operations. They also serve to save aircraft and prevent major damage. Aircraft arresting systems must be installed according to the latest official criteria of the military aircraft operational need. In most cases, the criteria can be found in AF) 32-1043, Managing, Operating, and Maintaining Aircraft Arresting Systems.</td><td></td></tr>
<tr><td>233.</td><td>Jet Exhaust Dangers</td><td>Establish adequate jet blast safety procedures per the appropriate guidance (that is, USAF, NAVAIR, NATO, or RAF).</td><td></td></tr>
<tr><td>234.</td><td>Servicing and
Flight Servicing Certificate</td><td>Ensure the applicant verifies ground personnel are trained for operations with an emphasis on the potential for fires during servicing. Prohibit non-trained personnel from servicing the aircraft. Recommend a Flight Servicing Certificate or similar document be used by the ground personnel to attest to the aircraft's condition (that is, critical components such as tires) before each flight to include the status of all servicing (that is, liquid levels, fuel levels, hydraulic fluid, and oxygen). Specific servicing areas may include: oxygen tanks and filler, fuel fillers, engine oil tank, brake control units, batteries, external power receptacles, rain removal system, single-point refueling (should be disabled), emergency air bottle and filler, and hydraulic reservoir.</td><td></td></tr>
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Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
235.	Ground Support Equipment	Verify all required ground equipment is available and in a serviceable condition.	
236.	Aerial Target Towing	Restrict all aerial towing. Notwithstanding the standard language in the FAA Order 8130.2 limitations concerning towing, the aircraft is not to be used for towing targets because such operations pose a danger to property and people on the ground and endanger the aircraft.	
237.	Drag Chute Installation and Use	If a drag chute is installed, verify it is done per the applicable technical guidance (that is, USAF, NAVAIR, NATO, or RAF).	
238.	Hot and Pressure Refueling	Prohibit hot and pressure refueling if the aircraft is so equipped. There are too many dangers with these types of operations.	
239.	Personal Flight Equipment	Recommend the operator use the adequate personal flight equipment and attire to verify safe operations. This includes a helmet, oxygen mask, fire retardant (Nomex) flight suit, gloves (that is, Nomex or leather), adequate foot gear (that is, boots), and clothing that does not interfere with cockpit systems and flight controls. Operating with a live ejection seat requires a harness. Therefore, recommend only an approved harness compatible with the ejection seat be used.	
240.	ARFF Coordination	Coordinate with Aircraft Rescue and Fire Fighting (ARFF) personnel at any airport of landing. A safety briefing should be provided and include: an ejection seat system overview; making the ejection seat safe, including location and use of safety pins; canopy jettison; fuel system, fuel tanks; intake dangers, engine shut-off throttle; fuel; batteries; flooding the engines; fire access panels and hot exhaust ports; and crew extraction-harness, oxygen, communications, and forcible entry. ARFF personnel should be provided with the relevant sections of the aircraft AFM and other appropriate references like Fire Fighting and Aircraft Crash Rescue, Vol. 3, Air University, Maxwell AFB, 1958. An additional reference is the NATOPS U.S. NAVY Aircraft Firefighting and Rescue Manual, NAVAIR 00-80R-14, dated October 15, 2003. The FAA maintains a series of ACs that provide guidance for Crash Fire Rescue personnel. Refer to AC 5210-17, Programs for Training of Aircraft Rescue and Firefighting. Note: On November 1, 2012, the NTSB issued Safety Recommendation A-12-64 through -67. The NTSB recommends the FAA require the identification of the presence and type of safety devices (such as ejection seats) that contain explosive components on the aircraft. It further stated that that information should be readily available to first responders and accident investigators by displaying it on the FAA's online aircraft registry and that the FAA should issue and distribute a publicly available safety bulletin to all 14 CFR part 139-certificated airports and to representative organizations of off-airport first responders, such as the International Association of Fire Chiefs and the National Fire Protection Association, to (1) inform first responders of the risks posed by the potential presence of all safety devices that contain explosive components (including ejection seats) on an aircraft during accident investigation and recovery, and (2) offer instructions about how to quickly obtain information from the FAA's online aircraft registry regarding the presence of these safety devices that contain explosive components on an aircraft.	
241.	Coordination With Airport	Ensure the applicant provides objective evidence that the airport manager of the airport where the aircraft is based has been notified regarding both the presence of explosive devices in these systems and the planned operation of an experimental aircraft from that airport.	
242.	ATC Coordination	Coordinate with ATC before any operation that may interfere with normal flow of traffic to ensure the requirement to avoid flight over populated areas is complied with. Note: ATC does not have the authority to waive any of the operating limitations or operating rules.	
243.	Formation Takeoffs and Landings	Prohibit formation takeoffs and landings. There is no civil use, including display, to justify the risks involved.	

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244.	Military/Public Aircraft Operations	Require the operator to obtain a declaration of PAO from the contracting entity or risk civil penalty for operating the aircraft outside the limits of the FAA experimental certificate. Some operators may enter into contracts with the DOD to provide military missions such as air combat maneuvering, target towing, and ECM. Such operations constitute PAO, not civil operations under FAA jurisdiction. Verify the operator understands the differences between PAOs and operations under a civil certificate. For example, the purpose of an airworthiness certificate in the exhibition category is limited to activities listed in § 21.191(d). Note: The following notice, which was issued by AFS-1 in March 2012, should be communicated to the applicant: "Any pilot operating a U.S. civil aircraft with an experimental certificate while conducting operations such as air-to-air combat simulations, electronic counter measures, target towing for aerial gunnery, and/or dropping simulated ordinances is operating *contrary* to the limits of the experimental certificate. Any operator offering to use a U.S. civil aircraft with an experimental certificate to conduct operations such as air-to-air combat simulations, electronic counter measures, target towing for aerial gunnery, and/or dropping simulated ordinances pursuant to a contract or other agreement with a foreign government or other foreign entity would not be doing so in accordance with any authority granted by the FAA as the State of Registry or State of the Operator. These activities are not included in the list of experimental certificate approved operations and may be subject to enforcement action by FAA. For those experimental aircraft operating overseas *within* the limitations of their certificate, FAA Order 8130.2, section 7, paragraph 4071(b) states that if an experimental airworthiness certificate is issued to an aircraft located in or outside of the United States for time-limited operations in another country, the experimental airworthiness certificate must be accompanied by appropriate operating limitations that have been coordinated with the responsible CAA *before* issuance." For additional information on public aircraft status, refer to 76 FR 16349, Notice of Policy Regarding Civil Aircraft Operators Providing Contract Support to Government Entities (Public Aircraft Operations), dated March 23, 2011.	
245.	TO 00-80G-1 and Display Safety	Recommend using TO 00-80G-1, Make Safe Procedures for Public Static Display, dated November 30, 2002, in preparing for display of the aircraft. This document addresses public safety around aircraft in the air show/display environment. It covers hydraulics, egress systems, fuel, arresting hooks, electrical, emergency power, pneumatic, air or ground launched missiles, weapons release (including inert rounds), access panels, antennas, and other equipment that can create a hazard peculiar to certain aircraft.	

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BAC 167 Risk Management, SOPs, and Best Practices			
246.	Use of Operational Risk Management (ORM)	Recommend an ORM-like approach be implemented by the owner/operator. ORM employs a five-step process: (1) Identify hazards, (2) Assess hazards, (3) Make risk decisions, (4) Implement controls, and (5) Supervise. The use of ORM principles will go a long way in enhancing the safe operation of the aircraft. ORM is a systematic decision-making process used to identify and manage hazards. ORM is a tool used to make informed decisions by providing the best baseline of knowledge and experience available. Its purpose is to increase safety by anticipating hazards and reducing the potential for loss. The ORM process is utilized on three levels based upon time and assets available. These include: (1) Time-critical: A quick mental review of the five-step process when time does not allow for any more (that is, in-flight mission/situation changes); (2) Deliberate: Experience and brain storming are used to identify hazards and is best done in groups (that is, aircraft moves, fly on/off); and (3) In-depth: More substantial tools are used to thoroughly study the hazards and their associated risk in complex operations. The ORM process includes the following principles: accept no unnecessary risk, anticipate and manage risk by planning, and make risk decisions at the right level.	
247.	System Safety MIL-STD-882B	Recommend the use of MIL-STD-882B, System Safety Program Requirements, in the operation of the aircraft. This guidance is also useful in the maintenance and operation of high-performance former military aircraft. It covers program management, risk identification, audits, and other safety-related practices.	
248.	Cockpit Resource Management (CRM) and Single-Pilot Resource Management (SRM)	Recommend the applicant and operator adopt a CRM-type program for aircraft operations. While CRM focuses on pilots operating in crew environments, many of the concepts apply to single-pilot operations. Many CRM principles have been successfully applied to single-pilot aircraft, and led to the development of SRM. SRM is defined as the art and science of managing all the resources (both on board the aircraft and from outside sources) available to a single pilot (prior and during flight) to ensure the successful outcome of the flight. SRM includes the concepts of Risk Management (RM), Task Management I, Automation Management (AM), Controlled Flight Into Terrain (CFIT) Awareness, and Situational Awareness (SA). SRM training helps the pilot maintain situational awareness by managing the automation and associated aircraft control and navigation tasks. This enables the pilot to accurately assess and manage risk and make accurate and timely decisions. Integrated CRM/SRM incorporates the use of specifically defined behavioral skills into aviation operations. Standardized training strategies are to be used in such areas as academics, simulators, and flight training. Practicing CRM/SRM principles will serve to prevent mishaps that result from poor crew coordination. At first glance, crew resource management for the single pilot might seem paradoxical but it is not. While multi-pilot operations have traditionally been the focus of CRM training, many elements are applicable to the single pilot operation. The Aircraft Owners and Pilots Association's (AOPA) Flight Training described single-pilot CRM as "found in the realm of aeronautical decision making, which is simply a systematic approach that pilots use to consistently find the best course(s) of action in response to a given set of circumstances." Wilkerson, Dave. September 2008. From a U.S. Navy standpoint, OPNAVINST 1542.7C, Crew Resource Management Program, dated October 12, 2001, can be used as guidance. Also refer to CRM For the Single Pilot. *Vector* (May/June 2008). FAA guidance includes: Summers, Michele M., Ayers, Frank Ayers, Connolly, Thomas Connolly, and Robertson, Charles. *Managing Risk through Scenario Based Training, Single Pilot Resource Management, and Learner Centered Grading*, 2007, and Chapter 17, *Airplane Flying Handbook* FAA-H-8083-3A. Note: Consider the use of AFI 11-290/AETC Sup 1, Cockpit/Crew Resource Management Training Program.	

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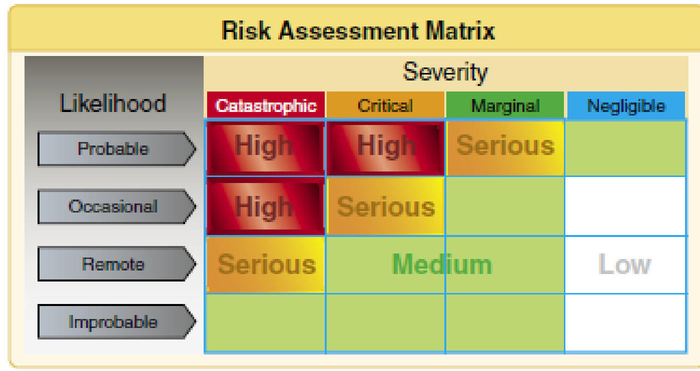
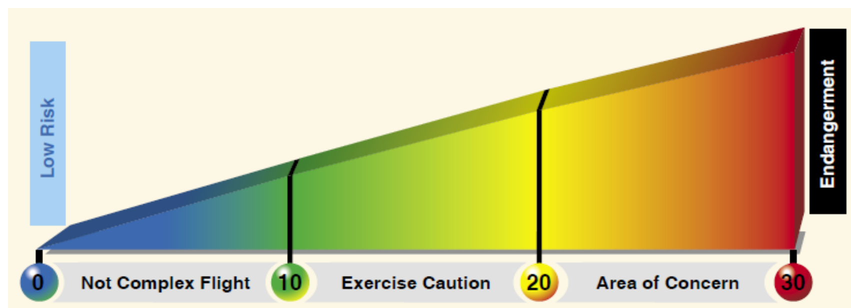
249.	Risk Matrix and Risk Assessment Tool	Recommend using a risk matrix in mitigating risk in aircraft operations. A risk matrix can be used for almost any operation by assigning likelihood and severity. In the case presented, the pilot assigned a likelihood of occasional and the severity as catastrophic. As one can see, this falls in the high risk area. The following is a risk assessment tool presented in figure 17-5 of the Airplane Flying Handbook, FAA-H-8083-3A.   Source: FAA	
250.	AFM Addendums	Consider additions or restrictions to the AFM. Operational restrictions should be also addressed in the AFM.	
251.	Training Guidance	Recommend applicable training manuals (that is, USAF, NAVAIR, NATO, or RAF) and materials be used as an integral part of the operation of the aircraft.	
252.	USAF Phase Training	Recommend SOPs and training incorporate the current USAF Phases of Training. These include— • Initial Qualification Training (IQT). This training is necessary to qualify aircrew for duties in the aircraft. • Mission Qualification Training (MQT). This training is necessary to qualify aircrew for specific unit mission or local area requirements. • Continuation Training (CT). This training is necessary for qualified aircrew to maintain their assigned level of proficiency and/or increase flight qualifications. It provides minimum ground and flight training event requirements.	

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253.	In-Flight Canopy Separation	Revise the pilot checklist and back seat occupant briefing to emphasize (that is, “warning-caution”) the proper closing of the canopy.	
254.	Fuel Mismanagement	Require special emphasis on fuel starvation and fuel management. Operator must be aware that it is important to note the total fuel load and compare to the fuel indicators to determine accuracy.	
255.	Speed Limitations Due To Avionics and Other Equipment	Verify the speed limit of the aircraft is adjusted to address installed avionics, which may have speed limitations.	
256.	Brake and Steering System	Recommend an adequate check-out on the aircraft’s brake and steering system has been given to anyone taking control of the aircraft on the ground.	
257.	Wet Runway	Recommend that the applicant/operator restrain from operating the aircraft on any runway that has standing water.	
258.	Command Ejection	Ensure SOPs address the command ejection issue, that is, who ejects first, per the appropriate guidance (that is, USAF, NAVAIR, NATO, or RAF), before the flight if the back seat or rear seat (depending on the aircraft type) is occupied.	
259.	Weight Limits for the Ejection Seats	Ensure the weight of any occupant meets design requirements for every flight, if the ejection seat is active.	
260.	Pressure Errors	The issue of pressure errors should be addressed. The presence of drop tanks on the pylons on some jets has a material effect on pressure error at high speeds, resulting in under-reading of the airspeed and Mach meter as compared with clean aircraft. If this is the case with this airplane it needs to be understood and may be related to a Mach meter calibration issue.	
261.	High AOA	Ensure SOPs emphasize the risk of high AOA operations and AOA usage in the landing configuration if so equipped.	
262.	Air Start Procedures	Ensure SOPs emphasize the correct air start procedures. This has been the cause of several accidents involving former military high-performance aircraft.	
263.	Configuration Checks	Recommend SOPs and training focus on configuration checks.	
264.	Asymmetric Wing Mounted Stores	Prohibit asymmetric wing mounted equipment regardless of the applicable manuals.	
265.	Restricting Aileron Movement With External Fuel Tanks	Ensure SOPs address flying with drop tanks on inboard and outboard pylons. Also, during maneuvers with fuel in the tanks it is recommended that aileron movement is restricted to half of full movement to avoid an excessive rate of roll.	
266.	External Tank(s) Failure	Restrict external tanks to only those cleared by the manufacturer, with the appropriate modifications and upgrades. Adhere to the drop tank limitations related to takeoff and landing performance, G limits, airspeed, and fuel in the tanks. There should not be any means of jettisoning these tanks while on the ground or in flight. There should not be any modifications to the drop tanks.	
267.	Brake Use	Recommend SOPs and training focus on the proper application of braking action during landing, especially in unusual circumstances. Establish SOPs to address the proper use and condition of the brake system. Example: Can the airplane be taxied at a speed which requires excessive use of the brakes and will this causes over heating of the tires and reduce their life? What are the limitations for the brakes: as an example, if the brakes do not hold at 6,800 rpm should they be considered unserviceable and the aircraft should not be flown?	

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268.	Oxygen Check	Recommend SOPs and training require the pilot to perform the "PRICE" check on the oxygen equipment (PRESSURE, REGULATOR, INDICATOR, CONNECTIONS and EMERGENCY) before every flight if a pressure oxygen system is installed. The acronym PRICE is a checklist memory-jogger that helps pilots and crewmembers inspect oxygen equipment. Mix and match components with caution. When interchanging oxygen systems components, ensure compatibility of the components storage containers, regulators, and masks. This is a particularly important issue because the age of the aircraft may require the use of modern equipment, at least for some components.	
269.	Spool Down Time	Ensure SOPs incorporate noting the spool down time of the engine after shutdown to complement the related maintenance action discussed above (yellow section).	
270.	End of Runway (EOR) Check	Recommend SOPs and training emphasize the importance of an EOR check.	
271.	Pitch-Up Tendencies	Recommend SOPs in training to emphasize the airplane's propensity to pitch-up, and if that changes with other models, or how that issue is addressed so as to not surprise the non-initiated pilot.	
272.	Specific Range	Recommend SOPs address minimum landing fuel. Verify actual aircraft-specific range (nautical air miles traveled per pound of fuel used).	
273.	Bingo and Minimum Landing Fuel	Recommend establishing SOPs addressing minimum landing fuel for IFR operations as provided in § 91.151, Fuel Requirements for Flight in VFR Conditions, in addition to § 91.167, to add a level of safety. In addition, a "Bingo" fuel status (a re-briefed amount of fuel for an aircraft that would allow a safe return to the base of intended landing) should be used in all flights. Note: Bingo fuel and minimum landing fuel are not necessarily the same, in that a call for Bingo fuel and a return to base still require managing the minimum landing fuel.	
274.	Landing Pattern Fuel	SOPs should require that at least 600 lb of fuel should be allowed for a circuit, landing and possible go-around.	
275.	Landing Gear Extension	Ensure SOPs address the undercarriage extension time. This is because it takes longer than other fighters and varied considerably depending on power. For example know that at normal power setting the sequence takes 6 of seconds, and at another lower power setting it takes, perhaps takes15 seconds. In addition, because many jet accidents have been caused by gear-up landings, SOPs should emphasize this in training.	
276.	Cross Wind Operations and Limitation	Ensure SOPs and training address the aircraft's crosswind characteristics.	
277.	Hydraulic Limitations	Ensure SOPs address the limitations of the BAC 167 hydraulic system. For example, it may give specific instructions about airplane configuration before servicing to prevent possible damage or spillage from over servicing.	
278.	Suspected Flight Control Failure	Recommend establishing SOPs for troubleshooting suspected in-flight control failures, that is, specific checklist procedures, altitude, and clear location. This is very important due to the aircrafts' history of flight control problems.	
279.	Negative G Flight	Ensure SOPs address the negative G limitation. The negative "G: fuel traps provide capacity for "approximately 15 seconds" of negative "G" flight.	
280.	Rejected Takeoff	Recommend SOPs and training address the abort decision.	
281.	FAA AC 91-79	Recommend using AC 91-79, Runway Overrun Prevention. According to AC 91-79, safe landings begin long before touchdown. Adhering to SOPs and best practices for stabilized approaches will always be the first line of defense in preventing a runway overrun.	

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282.	FAA AC 61-107	Recommend using AC 61-107, Operations of Aircraft at Altitudes Above 25,000 ft MSL and/or Mach Numbers (MMO) Greater Than 0.75. This AC can be used to assist pilots who are transitioning from aircraft with less performance capability to complex, high-performance aircraft that are capable of operating at high altitudes and high airspeeds. It also provides knowledge about the special physiological and aerodynamic considerations involved in these kinds of operations.	
283.	360-Degree Overhead Pattern Technique	Recommend the operator consider implementing SOPs to refrain from 360-degree overhead patterns. There is no civil application of this technique.	
284.	Crosswinds	Recommend the operator consider implementing SOPs that refer to conservative crosswind limitations (possibly more conservative than those in the AFM) and adhere to the appropriate crosswind landing techniques.	
285.	Outdoors	Recommend establishing SOPs to address the aircraft's sensitivities to weather, including hydraulic seal failures and leakages, freezing moisture, transparencies, air intake, and exhaust protection if necessary.	
286.	Low Approaches, High Speed, Low-Altitude Passes And Limitations/Concessions	Recommend no impromptu "low approaches" be permitted in normal operations outside the approved air show routine and during the exhibition of the aircraft in that context. An exhibition airworthiness certificate is for exhibition purposes only. In many cases, operators engage in "spur of the moment home air shows." Conducting such operations with an aircraft like the Jet Provost/Strikemaster is not only inconsistent with the operating limitations typically issued, but also a potentially dangerous activity because of (1) lack of planning and coordination these operations entail, and (2) the inherent dangers of maneuvering this aircraft at a low level. Note: In a 2011 decision, the NTSB found high speed, low-altitude operations were intentional fly-bys, rather than go-arounds.	
287.	Reporting Malfunctions and Defects	Ask the applicant/operator to report (to the FSDO or MIDO) incidents, malfunctions, and equipment defects found in maintenance, preflight, flight, and post-flight inspection. This would yield significant safety benefits to operators and the FAA. A 2011 study for the U.S. Navy points to the effectiveness of such practices. It stated: "The data analysis carried out was a comprehensive attempt to examine the strength of the link between safety climate and mishap probability. Our findings would seem to support the premise that safety climate and safety performance are, at best, weakly related. Mishaps are rare events, and they describe only part of the spectrum of risks pertaining to a work system. We suggest that measuring workers' self-reported safety attitudes and behavior is an alternative way to assess the discriminate validity of safety climate." O'Connor, October 2011. In other words, reporting safety issues, such as malfunctions, goes a long way in preventing an accident.	
288.	Cockpit Familiarization	Recommend detailed and comprehensive SOPs/training (not unlike the military-style training known as "blindfold cockpit check with boldface items" conducted in a cockpit or cockpit simulator) be instituted to ensure adequate cockpit familiarization for the PIC.	
289.	Simulated Emergencies	Permit simulated emergencies only in accordance with the applicable AFM, including emergency and abnormal checklists and in accordance with the limitations issued by the FAA for the aircraft.	
290.	High-G Training	Recommend the PIC and any occupants received training, including techniques to mitigate the potential effects of high-G exposure if operations above 3 Gs are contemplated.	
291.	Medical Fitness for Ejection Seats	Recommend the applicant/operator consider aircrew medical fitness as part of flight qualifications and preparation. In addition to meeting any ejection seat limitations (that is, weight and height) and seat-specific training, relevant U.S. military medical fitness standards could be used to ensure survival after ejection is maximized and injuries minimized. Ejection records show that when survivable, many ejections inflict serious injuries. Examples of aeromedical guidance include AFI 48-123, Medical Examinations and Standards, dated May 22, 2001, and Army Regulation 40-501, Standards of Medical Fitness, dated June 14, 1989. Also refer to Defense and Civil Institute of Environmental Medicine, Department of National Defense, Canada. *Ejection Systems and the Human Factors: A Guide for Flight Surgeons and Aeromedical Trainers*, May 1988.	

Issue #	Issue(s)	Recommended Review, Action(s), and Coordination with Applicant	Notes, Action(s) Taken, and Disposition
292.	49 CFR Part 830	Ask the applicant/operator to adopt open and transparent SOPs that promote the use and requirements of 49 CFR Part 830, Notification And Reporting Of Aircraft Accidents or Incidents and Preservation of Aircraft Wreckage, Mail, Cargo, and Records, because there have been many instances where accidents and incidents are not reported, hindering safety. Occurrences, which are events other than an accident or incident (that requires investigation by the Flight Standards Service for its potential impact on safety) should also be reported. Occurrences include the following when no injury, damage, or § 830.5 reporting requirements are involved: (1) aborted takeoffs not involving a runway excursion, (2) air turn-backs where the aircraft returns to the departure airport and lands without incident, and (3) air diversions where the aircraft diverts to a different destination for reasons other than weather conditions. Reference should be made of FAA Order 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting.	
293.	NATO Aviation Safety Guidance	Recommend the relevant sections of *Aviation Safety* AFSP-1(A), NATO, March 2007, be incorporated into the appropriate operational aspects of the operations to enhance overall safety. This document, which incorporates many safety issues concerning the safe operation of combat aircraft, sets out aviation safety principles, policies, and procedures—in particular those aimed at accident prevention. This document is a basic reference for everybody involved in aviation safety, both in occurrence prevention (starting from the development, testing, and introduction of material and procedures) and in its aftermath *(*the determination of the causes of an occurrence and the implementation of measures to prevent its recurrence). It is also recommended this process include internal safety audits. Safety audits help identify hazards and measure compliance with safety rules and standards. They assist in determining the adequate condition of work areas, adherence to safe work practices, and overall compliance with safety-based and risk-reduction procedures.	
294.	Aircrew Records	Recommend the applicant/operator establish and maintain processes to address aircrew qualifications and records. This could include pilot certification, competency, ground and flight training (records, instructors, conversion training, command training, and proficiency), medical, duty time, and flight time records.	
295.	Emergency Planning and Preparedness	Recommend the applicant/operator institute emergency plans and post-accident management SOPs that ensure the consequences of major incidents and accidents to aircraft are dealt with promptly and effectively.	
296.	Type Clubs or Organizations	Recommend the applicant/operator join a BAC 167 Jet Provost/Strikemaster type club or organization. This facilitates safety information collection and dissemination.	

Attachment 4—Additional Resources and References

Additional Resources

- Accident data/reports.
- Australia's CAAP 30-3(0), *Approved Maintenance Organization (AMO) — Limited Category Aircraft*, Civil Aviation Advisory Publication, December 2001. This publication addresses the restoration and maintenance of ex-military aircraft and is an excellent guide for developing adequate aircraft maintenance and inspection programs.
- CAP 632, *Operation of Permit to Fly Ex-Military Aircraft on the UK Register*. This is a comprehensive source of information and guidance on topics like technical requirements, specialist equipment and systems, pilot/crew qualification, operational requirements, records and oversight procedure, and safety management.
- Chamberlain, H. Dean. FAA News, *Armed and Dangerous,* November/December 2003.
- *CJAA Safety Operations Manual,* June 30, 2008.
- COMNAVAIRFORINST 4790.2A, Chapter 16, *Intermediate Level (I-Level) Maintenance Data System (MDS) Functions, Responsibilities, and Source Document Procedures*, CH-2 10, November 2009.
- Defense and Civil Institute of Environmental Medicine, Department of National Defense, Canada. *Ejection Systems and the Human Factors: A Guide for Flight Surgeons and Aeromedical Trainers*, May 1988.
- *Dictionary of Military and Associated Terms.* Department of Defense, JCS Pub. 1, September 1974.
- Drury, Colin G. and Watson, Jean (FAA). *Human Factors Good Practices in Borescope Inspection*, 2001.
- FAA AC 5220-9, *Aircraft Arresting Systems.*
- FAA AC 150/5300-13, *Airport Design*.
- FAA AC 150/5220-22, *Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns*.
- See FEDERAL FIREARMS REGULATIONS REFERENCE GUIDE, ATF Publication 5300.4, Revised September 2005.
- Morris, Greg. EAA Warbirds of America. Warbirds (magazine), *Warbird Airmanship*, March 2009.
- NATO AFSP-1(A), *Aviation Safety*, March 2007.
- NATOPS OPNAVINST 3710.7U, *General Flight and Operating Instructions*, November 23, 2009.
- NAVAIR 00-80R-14, *U.S. Navy Aircraft Firefighting and Rescue Manual,* October 15, 2003.
- NAVAIR 00-80T-109, *Aircraft Refueling NATOPS Manual*, June 15, 2002.
- *Naval Aviation Maintenance Program Standard Operating Procedures* (NAMPSOPs), chapter 10.
- NAVPERS 00-8-T-80, *Aerodynamics for Naval Aviators*, January 1965.
- New Zealand Civil Aviation Authority. AC 43-21, *Escape and Egress Systems*, December 25, 1997.
- Safety Regulation Group, Civil Aviation Authority (UK). CAA Document No. 743, *Civil Air Displays: A Guide for Pilots*, Transport Canada, 2003. *Maintenance and*

Manufacturing Staff Instructions, MSI 52, Issuance of Special Certificate of Airworthiness – Limited, 03/31/2006.
- U.S. Department of Defense. Manual 4160.28 (volume 3), *Defense Demilitarization: Procedural Guidance,* June 7, 2011.
- USAF AFP 127-1 and NAVAIR 00-80T-116-2*, Technical Manual Safety Investigation, Volume II Investigative Techniques*, July 31, 1987.
- USAF TO 1-1-300, *Maintenance Operational Checks and Flight Checks*, June 15, 2012.
- USAF TO 1-1-691, *Corrosion Prevention and Control Manual.*
- USAF TO 1-1A-1, *Engineering Handbook Series for Aircraft Repair, General Manual for Structural Repair*, November 15, 2006.

References and Bibliography

Published Sources

Four Minute Warning - Britain's Cold War, B. Clark (Tempus Publishing, Stroud), 2005
British Aircraft Corporation; A History BT, C. Gardner (Batsford Ltd, London), 1981
Jet Provost – The Little Plane With The Big History, Bob Clarke, Amberley Publishing, 2008
The Time of my life; D. Healey (Penguin Books), 1989
Test Pilot; B. Johnson (BBC Publications), 1986
Riding the Storm 1956 - 1959; H. Macmillan (Macmillan, London), 1971
Per Ardua: The Rise of British Airpower 1911 – 1939; H. Saunders (Oxford University Press, London)
Strong Foundations; Driffield's Aerodrome from 1917 to 2000; Simmons & Abraham (Hutton Press Ltd Beverley), 1997
Royal Air Force Flying Training and Support Units; Sturtivant, Hamlin, and Halley, (Air-Britain Publications), 1997
The Labour Government 1664 – 1970: A Personal Record; H. Wilson (Weindenfeld/Michael Joseph), 1971
Moutbatten: the official Biography; P. Ziegler (Book Club Associates), 1985

Government Documents

AAIB Bulletin No. 8/2003. Ref. EW/C2002/08/04
AAIB Bulletin No: Ref:EW/G2001/02/06
Accident to Jet Provost XD680 on 1-9-55, Accidents Investigaton Branch, 15-11-1956 (PRO (AVAI 5/34))
Aircraft Accident Involving Royal Air Force Jet Provost T3 XN590. Military Aircraft Accident Summaries MAAS 5/82 19-02-1982
Aircraft Accident Involving Royal Air Force Jet Provost T3A XN641. Military Aircraft Accident Summaries MAAS 6/85/2, 24-04-1985
Aircraft Accident Involving Royal Air Force Jet Provost T3A XN643. Military Aircraft Accident Summaries MAAS 6/83/2, 24-04-1985
Aircraft Accident Involving Royal Air Force Jet Provost T5A XW288. Military Aircraft Accident Summaries MAAS 20/83, 12-07-1983

Aircraft Accident Involving Royal Air Force Jet Provost T5A XW407 & XW411. Military Aircraft Accident Summaries MAAS 1/87, 09-02-1987
Aircraft Accident Involving Royal Air Force Jet Provost T5A XW288. Military Aircraft Accident Summaries MAAS 20/83, 12-07-1983
Aircraft Accident Involving Royal Air Force Jet Provost T5A XW417. Military Aircraft Accident Summaries MAAS 13/84, 04-04-1984
Aircraft Accident Involving Royal Air Force Jet Provost T5A XN473. Military Aircraft Accident Summaries MAAS 9/85, 14-05-1985
Aircraft Accident Involving Royal Air Force Jet Provost T5A XM453. Military Aircraft Accident Summaries MAAS 17/84, 26-09-1984
Aircraft Accident Involving Royal Air Force Jet Provost T5A XW308. Military Aircraft Accident Summaries MAAS 3/82, 10-02-1982
Aircraft and Engine Performance Tests on a Jet Provost fitted with a Viper 11 engine Bristol Siddeley Engine. Report No.V.II/I. June 1959
Electromagnetic Compatibility of Weapons Fitted to BAC-167 Strikemaster MK 87 Aircraft. MAS Ref: AV/583/029. 20 January 1970
Fatigue Loadings in Flight. Tech Note No. Structures 260. 02/1959
First Prototpe Jet Provost T.Mk.5 XS230. Despatch Brochure for A&AEE Boscombe Down. Flight Test Report AFN/JP/8.
Full Scale Spinning Tests on the Percival Provost Mk.I.Mistry of Supply.
Jet Provost MK 5 – Miniature Detonating Cord Clearance Trials. MOD Ref AH/563/02 24 May 1973
Jet Provost MKS 3 and 4 – Ejection Through Canopy Trials. MOD Ref AH/661/047 13 November 1974.
Jet Provost Prototype T.Mk.3 G-23-I. Qualitative Preview Handling Assessment. AAEE/875/3 April 1958 (AVIA) 18/4244
Jet Provost T.Mk.2 – Cockpit Layout Ref. QF 210.
Ministry of Supply AirB2(a), Jet Provost Mark 3, 29 January 1957. (PRO T 225/810).
Ministry of SupplyDM.233/645/025, Jet Provost T.Mk.3, 19January 1959. (PRO T 225/810).
Ministry of Supply, Jet Provost Mark III, 22 February 1959. (PRO T 225/810).
Poachers Commentary 1976, Central Flying School. RACF Cranwell.
Report on the 150 hour Development Flight Testing of Viper 8 Engine V.1505 in Hunting Mk.II Jet Provost XD.694 (April 1958).
Security Council resolution 82 (1950) Resolution of 25 June 1950
Standard Operating Procedures The Poachers 1976.
Tech Note Aero.2366. August 1955.
The Poachers 1975. Training Command Flight Safety Magazine. Jan-Mar 1976.

<u>Air Publications</u>

AP 101B-230 ¾ /5-5A2: Jet Provost Safety And Serviceing Bites.
AP 101B-2303 & 4-15: Pilots Notes Jet Provost T Mk4.
AP 101B-2303A-15: Jet Provost T Mk 3A Aircrew Manual
AP 101B-2305-15 Jet Provost T Mk 5A Aircrew Manual with T Mk 5 Supplement.
AP 4349A Provost T I Pilots Notes.
AP 4254A Prentice I Pilots Notes.

Australian Transport Safety Bureau Ref. Nov 2007/DOTARS 50390.
Court Of Magistrates (Malta) As A Court Of Criminal Judicature. Magistrate Dr. Antonio Micallef Trigona. Sitting of the 10th January, 2008. Number 479/2007.
The Observer, Sunday June 29 2003. Antony Barnett, Public Affairs Editor.
Finally the excellent web-based research by Mark Russell http://www.jetprovostheaven.co

2010 Nall Report, AOPA Air Safety Institute. Frederick, Maryland, 2010.
49 U.S.C.
A Farewell to Arms. *World Air Power Journal*, Vol. 20 (Spring 1995).
Adams, Harold W. *Aircraft Hydraulics.* McGraw-Hill Book Company, Inc., New York, 1943.
AC 43.18 *Fabrication of Aircraft parts by Maintenance Personnel*.
Advisory Circular AC 120-17A *Maintenance Control by Reliability Methods*. FAA, March 27, 1978.
Aeronautical Material Shelf Life Program. *Mech (*Winter 1974).
Andrade, John M. *Latin-American Military Aviation.* Midland Counties Publications, Leicester, England, 1982.
Angelucci, E. and Matricardi, P. *Les Avions 5 – L'Ere des Engins à Réaction*. Elsevier, Bruxelles, 1979.
Aviação Militar na América Latina. *Flap International,* Vol. 42, No. 394 (Julho 2005).
Bain, Chris J. *Cold War Hot Wings.* Pen & Sword Aviation, South Yorkshire, England, 2007.
Beedle, J. *43 Squadron.* Beaumont Aviation Literature. London, 1966.
Beedle, Jimmy. *The Fighting Cocks – 43 (Fighter) Squadron*. Pen & Sword Aviation, Barnsley, South Yorkshire, England, 2011.
Bennett, James (Ed.). Flying the World's Greatest Aircraft. Fall River Press, New York, 2009.
Bodemer, Alfred. *Les Turbomachines Aeronautiques Mondiales*. Éditions Larivière, Paris, 1989.
Boot, Roy. *From Spitfire to Eurofighter: 45 years of Combat Aircraft Design.* Airlife, Shrewsbury, England, 1990.
Brackx, Daniel. *Blu Crash Archief*. Flash Luchvaart Winkel, Eindhoven, Netherlands, 2004.
Brent, Winston. *African Air Forces.* Freeworld Publications, South Africa, 1999.
Bridgewater, Steve. The Tower Bridge Incident. *Jets Monthly*, (July 2011).
Broad, Brad. Hunter Heresy. *Air International,* (September 1979).
Brookes, Andrew. *Crash! Military Aircraft Disasters, Accidents and Incidents.* Ian Allan, London, 1991.
Busy Year Ahead for Hunter Club. *Fly Past,* No. 287 (June 2005).
CAP 6–2 – Operation of 'Permit-to-fly' Ex-Military Aircraft on the UK Register. UK CAA, 2009.
CAR/CAM 1.73-1(a), Experimental Airworthiness Certificates: Type of Operations, CAR/CAM 1.74, Experimental Certificates, Requirements for Issuance, and CAR/CAM 1.75-1, Experimental Certificates: Duration.
CJAA Annual Convention 2011 Safety Review. (March 19, 2011).
Cook, Jerry W. (Brig. Gen. USAF, Retired). *Once a Fighter Pilot.* McGraw-Hill, New York, 1996.
Conditional Donation of an F-4D Aircraft. Audit Report, DOD Office of the Inspector General, Report No. 97-222, September 30, 1997.
Croft, John. RVSM Non-Compliance Alarming FAA. *Flight International*, Vol. 181, No. 5325 (7-13 February 2012).
Crosby, Chester G. (Dr.) *Readings in Aircraft Maintenance Management, MAS 609-2.* Embry-Riddle Aeronautical University, Daytona Beach, February 1991.

Crusius, Timothy and Channell, Carolyn E. *The Aims of Argument*. McGraw-Hill, New York, 2003.
Debacker, Paul. *La Reconstruction de la Force Aérienne Belge, 1945-1970*. Éditions L'Officine, Paris, France, 2004.
Donald, David and Lake, Jon. *The Encyclopedia of Word Military Aircraft.* Barnes & Noble Books, New York, 2000.
Donaldson, T. S. and Poggio, E.C. *Depot Inspection and Repair Capability: Unique or Redundant?* USAF, Rand Corporation, November 1974.
Duke, Neville. *Test Pilot.* Grub Street, London, 1953.
Dwiggins, Don. *The Complete Book of Cockpits.* TAB books, Inc. Blue Ridge Summit, Pennsylvania, 1982.
Eden, Paul and Moeng, Soph. *Modern Military Aircraft Anatomy.* Metro Books, Aerospace Publishing Ltd., London, 2002.
Ellis, Paul. *Aircraft of the Royal Navy.* Jane's Publishing Company, London, 1982.
Evans, Don. *The Long Dart: A Short History of British Target Towing.* Flight Recorder Publications, East Yorkshire, England, 2004.
FAA-H-8083-1 *Aircraft Weight and Balance Handbook.*
Fiddian, Paul. Camm's Most. *Classic Jet.* Classic Aircraft (June 2012).
First and Last Within Weeks! *Flypast*, No. 244 (November 2001).
Fuel Facts: Safe Handling of JP Fuels. Approach (November 1962).
Gander, Terry. *Encyclopedia of the Modern Royal Air Force.* Guild Publishing, London, 1984.
Goyer, Robert. Safety Against the Odds. *Flying,* Vol. 137, N0. 5 (May 2010).
Green, William and Swanborough, Gordon*. Flying Colors*. Salamander Books, Ltd., London, 1981.
Guevara, Iñigo, Moyano. *Latin American Fighters: A History of Fighter Jets in Service With Latin American Air Arms.* Harpla Publishing, Houston, Texas, 2009.
Hagedorn, Dan. *Latin American Air Wars,* Hikoki Publications Ltd.: 2006.
Hall, Åke, and Lindquist, Per. *F 9 Kungl.Göta Flyflottilj.* Förlag Air Historic Research AB, Värnamo, Sweden, 2005.
Hamlin, Fred, and Miller, Eleanor Thayer (Eds.). *The Aircraft Year Book 1955.* Lincoln Press Inc., Washington, DC, 1956.
Happy Four! Flypast, No. 273 (April 2004).
Harder, Robert O. *Flying From the Black Hole.* Naval Institute Press, Annapolis, Maryland, 2009.
Hobbs, David. *Aircraft of the Royal Navy Since 1945.* Maritime Books, Liskeard, Cornwall, England.
Honour, Walt. Lt. Cdr. Spin/Departure Training: A Must! *Approach* (April 1976).
Hünecke, Klaus. *Jet Engines: Fundamentals of Theory, Design and Operation*. Motorbooks International, Osceola, Wisconsin, 2000.
Jackson, Robert and Winchester, Jim. *Military Aircraft: 1914 to the Present Day.* Barnes & Noble, New York, 2007.
Jackson, Robert and Winchester, Jim. *Military Aircraft Compared and Contrasted.* Barnes & Noble, New York, 2006.
Jackson, Paul. *Belgian Military Aviation 1945 – 1977*. Midland Counties Publications, Leicester, England, 1977.
Jackson, A. Paul. *Dutch Military Aviation 1945 – 1978*. Midland Counties Publications, Leicester, England, 1978.
Jefford, C. G. *The Flying Camels: The History of No. 45 Squadron RAF.* The Gresham Press, Surrey, England, 1995.

Jensen, Terry L. Eject! Eject! *Air Classics Quarterly Review* (Summer 1976).
Jet Trainers: Part 1 – The Brits. *Today's Pilot,* (April 2002).
Jørgensen, Jan. *Flyvevåbnet: Scenes From Danish Military Aviation History*. Nordic Airpower 2010, Denmark, 2010.
Kappas, Joanna. *Review of Risk and Reliability Methods for Aircraft Gas Turbine Engines*. DSTO-TR-1305, DSTO Aeronautical and Maritime research Laboratory, Victoria, Australia, May 2002.
Kay, Antony L. *Turbojet: History and Development 1930-1960*. Crowood Press, Wiltshire, England, 2007.
Lal, P. C. *My Years with the IAF.* Lancer Publishers, New Delhi, India, 2008.
Lightning Crash Report Published. *Classic Aircraft* (October 2012).
Lister, Pete. Maintenance Control: Keystone of Squadron Ops. *Naval Aviation News,* (March/April 1986).
Lednicer, David. *Airfoils.* Analytical Methods, Inc.
Maintenance and the Aircraft Accident Rate. *Approach* (May 1962).
Malloy, Alfred M. Corrosion Control in Naval Aircraft. *Naval Aviation News* (May 1975).
Memory Lane. *Jets Monthly*, (July 2011).
Mercer, Brian. *Black Arrow Blue Diamond.* Pen &Sword Aviation, South Yorkshire, England, 2006.
Miyashita, T. Rebuilt Aircraft Tires Are as Good or Better Than New Tires. *Mech* (winter 1974).
More Sea Harriers. *World Air Power Journal*, Vol. 18 (Fall 1994).
Moreman, Glen. Hunter Fest. *Jets Monthly*, (July 2011).
Newdick, Thomas, and Cooper, Tom. *Modern Military Airpower 1990-Present.* Amber Books, London, 2010.
Nylén, Anders, and Jørgensen. *Flygvapnet: Scenes From Swedish Military Aviation History*. Nordic Airpower 2011, Denmark, 2011.
O'Connor, William B. *Stealth Fighter*. Zenith Press, Minneapolis, Minnesota, 2012.
Parrish, Robert L. Maintenance Records and Compliance. *Business & Commercial Aviation*, March 1989.
Petter-Bowyer, P. J. H. *Winds of Destruction*. Trafford, Victoria, Canada, 2003.
Pure Adrenaline. *Flypast*, No. 274 (December 2004).
Punter, H. An Arabian Magic Carpet. *Air International*, Vol. 15, No. 4 (October 1978).
Record-Breaking Hunter Engine Removed. *Flypast,* No. 373 (August 2002).
Republic of Singapore Air Force – RSAF. *World Air Power Journal*, Vol. 41 (Summer 2000).
Richardson, Doug. *The Illustrated Encyclopedia of Modern Warplanes.* Crescent Books, New York, 1982.
Robinson, AVM. Flying to Paradise. *Flypast,* No. 248 (March 2002).
Sadik, Ahmad and Cooper, Tom. *Iraqi Fighters 1953-2003: Camouflage & Markings.* Harpla Publishing, Houston, Texas, 2008.
Salt, Beryl. *A Pride of Eagles: The Definitive History of the Rhodesian Air Force 1920-1980.* Covos Day, Johannesburg & London, 2001.
Scandinavian Hunters. *Flypast*, No. 207 (October 1998).
Schlesinger, Robert J. *Principles of Electronic Warfare.* Peninsula Publishing, Los Altos, California, 1961.
Seytre, Jean Sébastien. Apache's Reserve. *Air Forces Monthly,* No. 295 (October 2012)
Spick, Mike. *The Great Book of Modern Warplanes.* Salamander Books Limited, London, 2000.
Stopper in the Baltic – Royal Danish Air Force: Guardian of the Baltic Straits. *Air International* (October 1979).
Steinemann, Peter. Fuerza Aérea de Chile. *World Air Power Journal*, Vol. 1 (Spring 1990).
Stuart-Paul, Ronald. *The Royal Saudi Air Force*. Bae System, 2001.

Sturgeon, W. R. *Canadian Forces Aircrew Ejection, Descent and Landing Injuries, 1 January 1975- 31 December 1987.* Defense and Civil Institute of Environmental Medicine, Downsview, Ontario, Canada, December 1988.

Sturtivant, Ray, Burrow, Mick, and Howard, Lee. *Fleet Air Arm Fixed-Wing Aircraft Since 1946*. Air-Britain Ltd., Tonbridge, Kent, England, 2004.

Switzerland: Kommando der Fleiger – und Fliegerabwehrtruppen. *World Air Power Journal,* Vol. 5 (Spring 1991).

Taylor, Bill. *Royal Air Force Germany*. Midland Publishing, Hinckley, England, 2003.

Taylor, Michael J. H. *Jet Warplanes.* Gallery Books, New York, 1984.

Taylor, Peter. Unforgettable Years. *Flypast*, No. 240 (July 2001).

The Aircraft Gas Turbine Engine and Its Operation. United technologies, Pratt & Whitney, August 1988.

The Civil Aeronautics Act of 1938, as Amended. Revised September 1, 1948, Washington, DC.

The Indian Air Force and Its Aircraft. Pilot Press Ltd., Kent, England, 1982.

The Jets Are Gathering! *Fly Past,* No. 206 (September 1998).

Thoroughbred Hunter. *Flying Review International*, Vol. 19, No. 7 (April 1964).

Treister, Suzanne. *NATO: The Military Codification System for the Ordering of Everything in the World.* Black Dog Publishing, London, 2008.

Tuttle, Jim. *Eject! The Complete History of US Aircraft Escape Systems.* MBI Publishing Company, St. Paul, Minnesota, 2002.

Twenty Year Hunting. *Aircraft Illustrated,* Vol. 7, No. 9 (September 1974).

Van Haute, André. Belgian Spearhead. *Air Enthusiast,* No. 76 (July/August 1998).

Verier, Mike. *Yeovilton: Defenders of the Fleet*. Osprey Aerospace, London, 1991.

Wade, Harold. *Cold War Fighter Pilot.* Trafford, Victoria, British Columbia, 2004.

Wainwright, Marshall. Scandinavian Hunter. *Warbirds International*, Vol. 29, No. 1 (January/February 2010).

Wagner, Paul J. *Air Force Tac and Recce Aircraft*. RoseDog Books, Pittsburgh, Pennsylvania, 2009.

Walpole, Nigel. *Devon's Fast-Jet Cradle.* Royal Air Force Salute. Key Publishing Company, Lincolnshire, England, 2009.

Walpole, Nigel. On Time, On Target. *Classic Aircraft* (October 2012).

Ward, Richard L. *Hunter Squadrons of the Royal Air Force and Fleet Air Arm*. Linewrights Ltd., Essex, England, 1985.

Watson, Simon and Camp, Phil. Still Going Strong: India's Hunters. *Flypast,* No. 240 (July 2001).

Weiss, Arturo. *SJ30-2 Reaches Mach .83 in Test Flight.* November 29, 2002.

Whalley, Jonathan. Miss Demeanor. *Jets Monthly*, (July 2011).

Wilkinson, Paul H. *Aircraft Engines of the World 1957*. Paul H. Wilkinson, Washington, D.C., 1957.

Winchester, Jim (Ed.) *American Military Aircraft*. Barnes & Noble Publishing, 2005.

<u>Organizations</u>

Air Investigation Branch (UK).
Aircraft Accident Investigation Board (AAIB), UK.
Air Force Safety Center.
Aircraft Owners and Pilots Association.
Australia Civil Aviation Safety Authority.

Australia Warbirds Association, Ltd.
Dutch Aviation Society.
Experimental Aircraft Association (EAA).
Flight Safety Foundation.
Naval Safety Center.
OFAC - Office Fédéral de L'Aviation Civile (Swiss CAA).
Royal Air Force.
Royal Air Force Museum.
San Diego Air & Space Museum.
South African Civil Aviation Authority.
Transport Canada.

Audiovisual Sources

Display Teams of the Royal Air Force. DD Home Entertainment, UK, 2003 (DVD).
Hawker Hunter. Black Eagle Aviation Series, South Africa, 2008 (DVD).
Kemble Hunter 50th Anniversary Airshow. DD Video, Middlesex, UK, 2001 (DVD).
Klu in Koude Oorlog: Hawker Hunter. Centerline. Rotterdam, Netherlands, 2004 (DVD).
Rolling in the Sky: Patrouille Suisse. Pioneer LDC, 1990 (DVD).
The Hawker Hunter. Delta, Kent, England, 2012 (DVD).
When Pilots Eject. Discovery Channel, 2003 (DVD).
http://www.youtube.com/watch?v=_RiFKizcwmE

Web Sources

http://aviation-safety.net/index.php
http://belmilac.wetpaint.com/page/Part+1%3A+ID1+-+ID25
http://classicjets.org
http://editorialmanutara.blogspot.com/search/label/hawker%20hun
http://en.wikipedia.org/wiki/Rolls-Royce_Avon
http://forum.keypublishing.com
http://forum.keypublishing.co.uk/archive
http://forum.scramble.nl
http://saairforce.co.za/forum
ums.com/forums/12/topics/81216
http://safetycenter.navy.mil/
http://www.1fsa.org/
http://www.aaib.gov.uk
www.aero-news.net
http://www.aircrashed.com
http://www.airliners.net
http://www.airventure.org
http://www.airwarriors.com
http://www.amicidellhunter.ch/

http://www.apache-aviation.fr/anglais/flotte.htm
http://www.atacusa.com/atac_resources.html
http://www.aviation-history.com
http://www.avweb.com/avwebflash/briefs/187264-1.html
http://www.australianwarbirds.com.au
http://www.bharat-rakshak.com/IAF/Today/Unit-Articles/390-TTF.html
http://www.caa.govt.nz/Script/Accident_Details.asp?Oc=01/1109
http://www.caa.co.uk/application.
http://www.classicjets.co.uk/nav.htm
http://www.clubhyper.com/reference/somalihuntersmt_1.htm
http://www.caa.co.za/
http://www.controller.com
http://www.designation-systems.net/usmilav/jetds/an-asq.html
http://www.enginehistory.org
http://www.ejection-history.org.uk
http://www.ejectionsite.com
http://www.faa.gov/regulations_policies/advisory_circulars
http://www.fliegermuseum.ch/
http://www.flightglobal.com
http://www.lortieaviation.com/aircraft.htm
http://www.martin-baker.com/products
www.peakdistrictaircrashes.co.uk/pages/peakdistrict/peakdistrictG-BTYL.htm
http://www.pictaero.com/fr/pictures/picture,87998
http://www.pprune.org/archive/index.php/t-487661.html
www.rhodesianforces.org/AircraftIncidents.htm
http://www.sbap.be/archivalia/pictures/picturesbaf.htm
http://www.scramble.nl
http://www.sicuropublishing.com
http://www.spyflight.co.uk/fr10.htm


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